Violent Deaths in Massachusetts: Surveillance Update 2006

Massachusetts Department of Public Health
Bureau of Health Information, Statistics, Research, and Evaluation
Injury Surveillance Program
Massachusetts Violent Death Reporting System

Violent Deaths in Massachusetts: Surveillance Update 2006

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For other Department of Public Health data, register for MassCHIP, the Department's free internet-accessible data warehouse: http://masschip.state.ma.us/

MAVDRS Advisory Group Members

We would like to acknowledge and thank those who participate in our Advisory Group. Members contribute their expertise, knowledge, and invaluable experience. The membership changes and therefore this list may include current members, past members, and those who have asked to participate in future meetings. Some recently added members may not be included here, although we would like to acknowledge their commitment. Similarly, some members may have been unable to continue their participation, thus are thanked for their past contributions.

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Table of Contents

Appendix B: Violent Death Age-Adjusted Rates 53

All Violent Deaths

Suicides

Homicides

Deaths of Undetermined Intent

Violent Deaths in Massachusetts, 2006

Injury Surveillance Program, Massachusetts Department of Public Health

Executive Summary

Case Definition

For inclusion in the Massachusetts Violent Death Reporting System (MAVDRS), a violent death is generally defined as a death which resulted from the intentional use of physical force or power against oneself, another person, or persons. MAVDRS includes violent deaths resulting from suicide, homicide, legal intervention (excluding execution), those of undetermined intent and all firearm-related deaths, regardless of intent. Final inclusion in the system is determined by ICD-10 code. All participating NVDRS states use the same data inclusion standards and variable definitions established by the CDC.

Occurrent Deaths

MAVDRS collects data on all violent deaths occurring in Massachusetts. In 2006, there were 40 victims who died in Massachusetts that were residents of other states or countries. There were eight victims who were injured in another state or country, but were brought to Massachusetts where they later died. These two groups are included in the MAVDRS database as they are occurrent deaths (deaths occurring in Massachusetts). However, there were 32 Massachusetts residents who died from a violent death in another state and are not included in the MAVDRS database, but may be captured by another NVDRS-funded state. Some of those victims may have been injured in Massachusetts, but were brought to a neighboring state due to the closer proximity of a hospital, where they later died.

Summary of Findings

Overview of Violent Deaths

In 2006, 739 violent deaths occurred in Massachusetts as a result of 724 separate incidents. Ninety-eight percent of incidents consisted of only one death. The remaining 13 incidents involved more than one violent death in multiple victim incidents (multiple homicides or suicides) or combined homicide/suicide incidents.

On average, 14 violent deaths a week occurred in the Commonwealth. The rate of violent death for all intents (suicide, homicide, undetermined, and accidental firearm) was 11.5/100,000. Suicides were over two times more frequent than homicides. The age group with the highest violent death rate was ages 45-54 (17.4/100,000). Among race/ethnicity groups, Black, non-Hispanics had the highest rate overall (27.2/100,000) compared to the range of 6.3 to 10.7/100,000 for all other groups. Of the 739 violent deaths in 2006, 62% (N=455) were suicides, 26% (N=194) were homicides, and 12% (N=85) were deaths of undetermined intent.

Suicides

In 2006, there were approximately nine suicides per week. From 2005 to 2006, the number of suicides decreased by a count of 13 (N=468 in 2005 to N=455 in 2006). Suicides increased by 15% for females from 2005 to 2006 (N=116 in 2005 and N=133 in 2006) and decreased 9% for males (N=352 in 2005 and N=322 in 2006). However, the suicide rate for males (10.3/100,000) was more than two times higher than that of females (4.0/100,000). Among all age groups, suicide rates were highest among the age group of 45-54 year olds (12.5 /100,000), which is a change from 2005 when the highest rate was among 35-44 year olds (10.3/100,000).

The most common suicide method was hanging/strangulation/suffocation which accounted for 38% of all suicides. There were 403 victims of suicide that had information about circumstances noted (89% of the total number of suicides). Of these suicides, the most common circumstance was having a current mental health problem which includes victims who have been diagnosed by a health professional as having a psychiatric condition and victims who were prescribed antidepressants or other psychiatric medication. This circumstance was noted for 46% (N= 185) of the suicide victims.

Homicides

In 2006, there were approximately four homicides per week. From 2005 to 2006, the number of homicides increased by a count of 13 (N=181 in 2005 and N=194 in 2006). For males, the number of homicides increased by a count of three from N=152 in 2005 to N=155 in 2006. The number of female homicides increased by ten (from N= 29 in 2005 to N=39 in 2006). Youth, ages 15-24, had the highest homicide number (N=73) and rate (8.1/100,000), which was almost three times higher than the statewide rate of 3.0/100,000. Fifty-eight percent (N=112) of homicides were due to firearms. There were 118 homicides with at least one circumstance known regarding the homicide (61% of the total number of homicides). Of these, 41% (N=48) were precipitated by an argument, abuse or conflict and over 1/4 (29%) were precipitated by another crime, i.e. the homicide occurred as a result of another felony and homicide was not the primary intent. Those crimes include robbery, drug trade, burglary, arson, and assault.

Deaths of Undetermined Intent

An important change occurred in 2005 affecting the number of deaths of undetermined intent in Massachusetts. Most injury deaths are referred to the Commonwealth of Massachusetts Office of the Chief Medical Examiner (OCME) for determination of cause and intent. In May 2005, a change in the OCME policy affected the assignment of manner/intent of many poisoning (drug overdose) deaths. Up to that point, poisoning deaths, where there was no explicit evidence that the case was a suicide or homicide, were assigned a manner of "could not be determined." With the new policy, these deaths are assigned a manner of accident/unintentional. This change caused the number of undetermined deaths in 2005 to be substantially less than in previous years. The current policy is similar to how these deaths are classified in other states. Because of this, caution should be used when comparing 2006 data to previous years' data.

To demonstrate, in 2004, there were 1,243 total violent deaths, with 50% (N=625) classified as undetermined intent. Of those undetermined intent deaths, 90% (N=560) were due to poisoning/drug overdoses. In 2005, there were a total of 741 violent deaths and only 12% (N=88) were of undetermined intent. In 2006, there were a total of 739 violent deaths and once again, 12% (N=85) were deaths of undetermined intent. Of these 85 deaths, 61% (N=52) were due to poisonings/drug overdoses.[1]

Legal Intervention Deaths

In 2006, four legal intervention deaths were reported to the Massachusetts Violent Death Reporting System. In all four incidents, police were acting in self-defense due to a weapon being brandished against them.

Unintentional Firearm Deaths

Massachusetts reported one unintentional firearm death in 2006 based on ICD-10 coding.

[1] For more information regarding unintentional poisonings, please see the Massachusetts Department of Public Health's *Injuries to Massachusetts Residents, 2006* from the Department's Injury Surveillance Program. You can obtain a copy of this report by contacting Beth Hume at (617) 624-5648 or via email at beth.hume@state.ma.us. The report is also available electronically at: http://www.mass.gov/Eeohhs2/docs/dph/injury_surveillance/injury_report_06.pdf

Violent death represents a serious but preventable public health problem. The U.S. Centers for Disease Control and Prevention (CDC) introduced the National Violent Death Reporting System (NVDRS) in 2001 in order to improve the surveillance of violent deaths nationwide.[1] A violent death results from the intentional use of physical force or power against oneself, another person, or a group or community. Violent deaths include suicides, homicides, deaths due to legal intervention (excluding executions), deaths of undetermined intent, and firearm-related deaths, regardless of intent. Violent deaths are classified as undetermined when the Medical Examiner does not have enough information to make a determination of how the individual died: whether a death was unintentional, was deliberately self-inflicted, or was caused by an assault. While not enough is known about these deaths to definitively establish intent, they are included in NVDRS because useful information regarding the circumstances of the death may be available.

Currently operating in 17 states, NVDRS is a state-based surveillance system that compiles information on violent deaths in order to provide a detailed picture of how and why they occur. In Massachusetts, the Violent Death Reporting System is part of the Injury Surveillance Program within the Massachusetts Department of Public Health (MDPH). NVDRS utilizes multiple data sources, including death certificates, medical examiner files, and law enforcement records in creating its data records. The NVDRS is an incident-based surveillance system, enabling identification of multiple deaths from the same incident, as well as linking suspects associated with the incident. Decisions about whether two or more deaths belong to the same incident are determined by the timing of the injuries, rather than the timing of the deaths, and are based on a 24 hour rule and source documents indicating a clear link between the deaths.

Detailed information from multiple sources enhances the ability of researchers, prevention specialists and policymakers to develop a better understanding of when, where, why and how violent deaths occur, as well as who is at risk. Information about the circumstances associated with violent death is a particularly unique and important feature of NVDRS, since it may help in identifying specific risk factors precipitating violence. The goal of NVDRS is to provide the information needed to reduce and to prevent violent death.

Objectives

With approximately 50,000 suicides and homicides taking place in the United States each year, the need for a national violent death surveillance system emerged as a significant public health issue in the late 1990s. Until recently, there was no comprehensive, incident-based public health surveillance system to collect information on these deaths and apply it to prevention efforts. With funding from the CDC, the Massachusetts Department of Public Health began collecting detailed information on violent deaths as part of NVDRS in 2003. This report summarizes results from the fourth year of data collection in Massachusetts.

Methods

Descriptive Statistics

In this report, information on violent deaths is summarized by counts, percentages, and rates. Simple counts represent the most basic measure of violent deaths and are important for quantifying the problem, while percentages offer a way of showing distributions in the underlying population relative to a factor of interest, such as age or gender. Rates add an additional level of detail by taking account of the size of the underlying population and facilitating comparisons between groups. Crude rates are presented throughout this report, unless otherwise noted, and are useful for developing community-level prevention strategies. Age-adjusted rates are provided in Appendix B to facilitate comparisons between communities or states which may have a widely disparate age distribution in the population. Death rates are expressed as the number of deaths per 100,000 population. Refer to the Technical Notes section of Appendix A for detailed information on population estimates used for calculating rates. Rates were calculated for specific demographic groups (i.e., age, gender, marital status, race/ethnicity, and level of education), as well as by county and city level. More extensive analysis of MAVDRS variables will be conducted as additional data years become available.

Case Identification, Definition, and Data Source

Violent death cases in the MAVDRS database are identified by the manner of death on death certificates. A record is created in the MAVDRS database for any death categorized as suicide, homicide, could not be determined, and accidental firearm-related deaths. However, for the analysis of violent deaths in this report, a

[1] Additional information on NVDRS can be found at http://www.cdc.gov/ncipc/profiles/nvdrs/facts.htm.

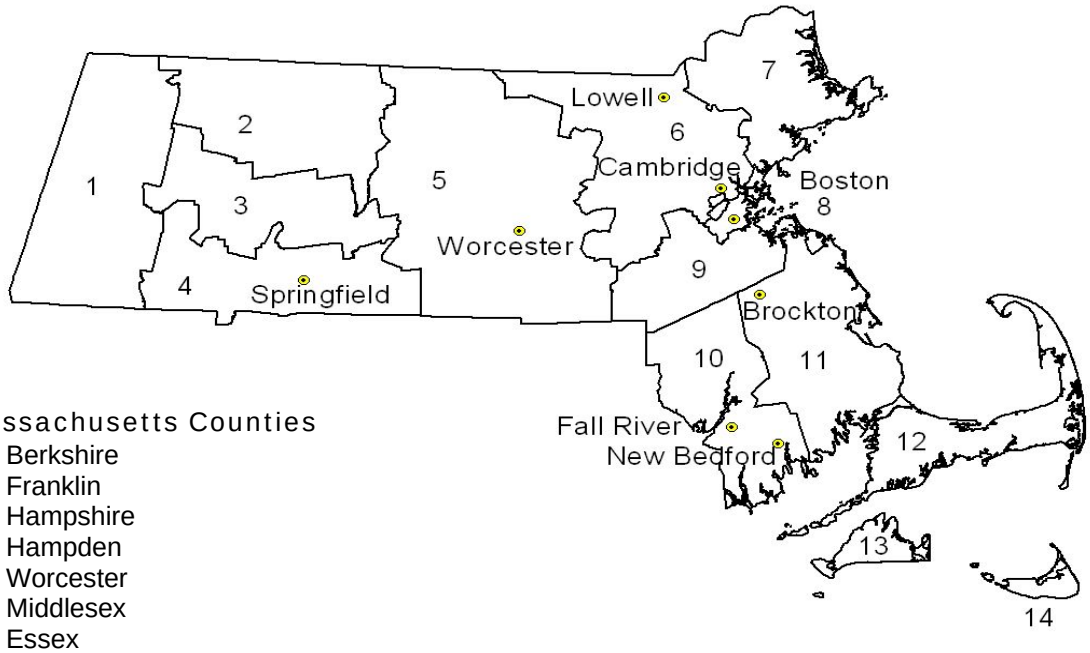
case definition is determined by the ICD-10 code for the underlying cause of death, which includes suicides, homicides, deaths of undetermined intent, unintentional firearm-related deaths, as well as deaths due to legal intervention (excluding legal executions). The ICD-10 codes used for case inclusion in this report can be found in the Technical Notes section of Appendix A.

For each record, additional information is subsequently added from law enforcement and medical examiner sources. Law enforcement documents include police reports and ballistic reports from the Boston Police Department and the MA State Police Department. In addition, information from Supplemental Homicide Reports (SHR) and National Incident Based Reporting System (NIBRS) are obtained from the MA State Police Crime Reporting Unit (CRU). The Office of the Chief Medical Examiner provides autopsy reports, toxicology results, hospital records, and Emergency Medical Services (EMS) records. Additional supplemental sources are included where appropriate.

Over 270 data elements may be collected for each incident in the database, including information on the following when applicable: the incident, the victim and suspect, toxicology, weapon(s), circumstances associated with the relationship between suspect and victim. The ICD-10 (International Classification of Diseases, Tenth Revision) coded death file maintained by MAVDRS is used to establish the final database for all cases meeting the MAVDRS case definition.

MAVDRS collects detailed information regarding the location of where the fatal injury occurred: the place (such as home, street, etc), the street address, city, county, and state. MAVDRS also collects data on place of death (such as emergency room, home, etc), but not the city where the actual death occurred. *For purposes of this report, all tables, figures, and bullets that mentions any location or place of death, refers to the location where the fatal injury occurred.*

Location of Counties and Major Cities in Massachusetts



Massachusetts Counties

1. Berkshire
2. Franklin
3. Hampshire
4. Hampden
5. Worcester
6. Middlesex
7. Essex
8. Suffolk
9. Norfolk
10. Bristol
11. Plymouth
12. Barnstable
13. Dukes
14. Nantucket

Section 1: Overview of Violent Deaths in Massachusetts

Data Highlights for 2006:

- Violent deaths claimed the lives of 14 victims a week on average, in Massachusetts in 2006 (N= 739).
- Of the 739 violent deaths, 62% were suicides (N=455), 26% were homicides (N=194), and 12% (N=85) were deaths of undetermined intent.
- The classification change at the Office of the Chief Medical Examiner (OCME) in 2005 affected the number of undetermined intent deaths in Massachusetts; they were substantially less than in previous years. In 2006, the number of deaths of undetermined intent was 85, only 12% of the total. Comparatively, in 2004, the number of deaths of undetermined intent was 625 (50% of the total violent deaths).

Compared to 2005:

- The number of suicides decreased by 3% (from N= 468 in 2005 down to N=455 in 2006).
- The number of homicides increased by 7% (from N=181 in 2005 up to N=194 in 2006).

Compared to the U.S.:

- The Massachusetts age-adjusted rates for all violent deaths in 2006 were lower than the U.S. age-adjusted rates for 2006.
- The Massachusetts age-adjusted suicide rate in 2006 was 6.8/100,000 compared to 11.0/100,000 for the U.S.
- The Massachusetts age-adjusted rate for homicide in 2006 was 3.1/100,000, half that of the U.S. age-adjusted rate of 6.2/100,000 for homicides.
- The Massachusetts age-adjusted rate for deaths of undetermined intent in 2006 was 1.2/100,000 and the U.S. age-adjusted rate was 1.7/100,000.

Table 1.1: Type of Incidents and Victims: Number and Percent, MA 2006				
	Incident		Victim	
Intent	**N**	**Percent**	**N**	**Percent**
Suicides				
Single victim suicide	450	62.2	450	60.9
Homicides				
Single victim homicide	171	23.6	171	23.1
Multiple victim homicide	8	1.1	16	2.2
Combined homicide-suicide	5	0.7	12	1.6
Single victim undetermined intent death	85	11.7	85	11.5
Unintentional firearm death	1	0.1	1	0.1
Legal Intervention	4	0.6	4	0.5
Total	**724**	**100**	**739**	**100**

In 2006, a total of 724 incidents in the MAVDRS database accounted for 739 violent deaths.

- Thirteen incidents resulted in the death of more than one person (homicide/suicide, multiple victim homicide), and consisted of 28 victims.
- 98% of incidents consisted of only one death.
- Multiple victim incidents included the following:
  - eight double homicides (one or more persons kills two people in the same incident)
  - five incidents where one person killed one or more others, then killed him/herself in the same incident (combined homicide/suicide incident)
- There was one reported unintentional firearm death.

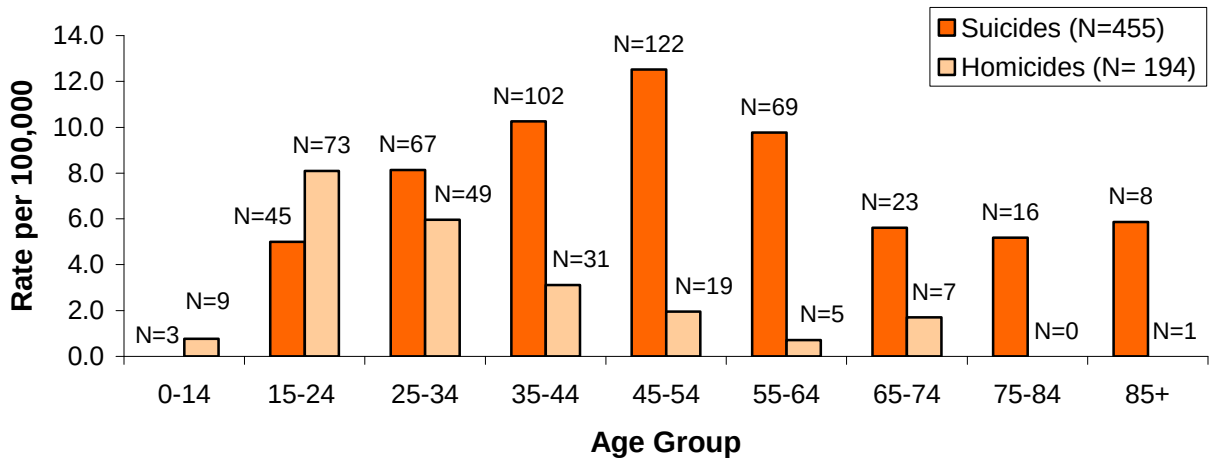
Table 1.2: Violent Deaths by Intent and Demographics: Number, Percent, and Rate, MA 2006			
	N	Percent	Rate per 100,000[1]
Intent			
Suicide	455	61.6	7.1
Homicide	194	26.3	3.0
Undetermined	85	11.5	1.3
Unintentional firearm	1	0.1	--
Legal intervention	4	0.5	--
Sex			
Male	532	72.0	17.1
Female	207	28.0	6.2
Race/Ethnicity			
White, non-Hispanic	554	75.0	10.7
Black, non-Hispanic	108	14.6	27.2
Asian, non-Hispanic	20	2.7	6.3
Hispanic	52	7.0	10.1
Other/mixed[2]	5	0.7	--
Age Group			
0-14	13	1.8	1.1
15-24	125	16.9	13.9
25-34	123	16.6	14.9
35-44	155	21.0	15.6
45-54	170	23.0	17.4
55-64	89	12.0	12.6
65-74	34	4.6	8.3
75-84	21	2.8	6.8
85+	9	1.2	6.6
Total	**739**	**100.0**	**11.5**

ADDITIONAL FINDINGS FOR 2006:

- The youngest victim was two months old and the oldest was 95 years old. The mean age of all victims was 41.6 and the median age was 40.
- Sixteen victims of a violent death were homeless.
- Eleven victims were injured while in custody, such as jail, state institution, foster care or injured prior to arrest.
- There were 45 war veterans[3] who died a violent death.
- Fourteen victims died of a violent death at their place of work.

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rates.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.
[3] This report only includes information where the deceased was a U.S. veteran and the war in which they served was specified.

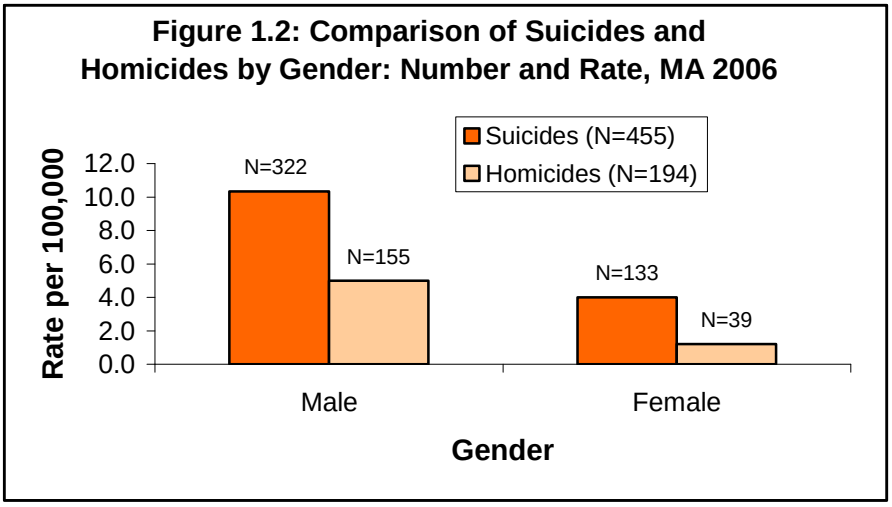
Figure 1.1: Comparison of Suicides and Homicides by Age Group: Number and Rate, MA 2006



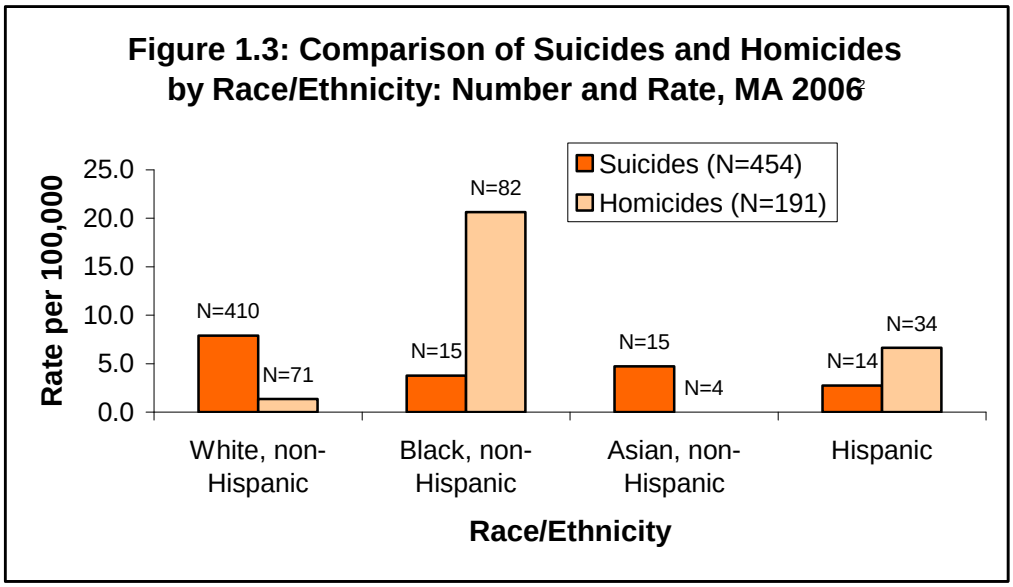
- Among 15-24 year olds, the rate of homicides (8.1/100,000) was 1.6 times higher than the rate of suicides (5.0/100,000).
- The largest number of homicides occurred among youths age 0-24; 42% (N=82) of the total number of homicides were in this age group.
- For all age groups age 25 and over, the rate of suicides was greater than the rate of homicides.
- The largest discrepancy in rates of homicides and suicides was among the 55-64 year olds, among whom the rate of suicides was nearly 14 times higher than the rate of homicides.

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rates.

COMPARISON BETWEEN SUICIDES AND HOMICIDES[1]



- For males, suicide rates (10.3/100,000) were 2.1 times higher than homicide rates (5.0/100,000).
- For females, suicide rates (4.0/100,000) were 3.3 times higher than homicide rates (1.2/100,000).



- Black, non-Hispanics and Hispanics had higher rates of homicide than suicide; whereas, White, non-Hispanics and Asian, non-Hispanics had higher rates of suicide than homicide.
- Among White, non-Hispanics, the suicide rate (7.9/100,000) was 5.6 times higher than the homicide rate 1.4/100,000).
- Among Black, non-Hispanics, the homicide rate (20.6/100,000) was 5.4 times higher than the suicide rate (3.8/100,000).
- Among Hispanics, the homicide rate (6.6/100,000) was 2.4 times higher than the suicide rate (2.7/100,000).

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rates.
[2] There were 5 victims whose race was "other" or "mixed." Rates for other/mixed race were not calculated due to lack of denominator information.

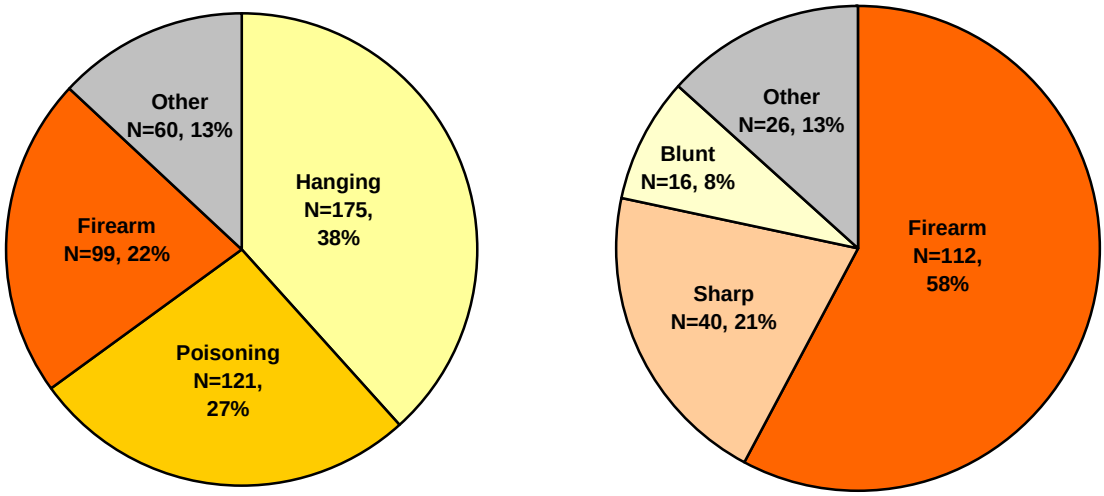
METHODS OF SUICIDES AND HOMICIDES

MAVDRS collects information on the cause or weapon used to inflict the fatal injury. A weapon can be a firearm (e.g. handgun, shotgun), a sharp instrument (e.g. knife), a blunt instrument (e.g. baseball bat), fire/burns, transport vehicles (e.g. train), falls, etc. It may also refer to the method of death, for example, "hanging/ strangulation/suffocation" is defined as a weapon by NVDRS. This includes when someone hangs himself/herself, or when a person is manually strangled. NVDRS combines these asphyxiation-type deaths under one weapon called "hanging/strangulation/suffocation." In this report, this weapon is referred to as "hanging."

Another method/weapon is called "poisoning" and it typically refers to drug overdoses, including alcohol, street drugs, prescription drugs, or a combination of these. A poisoning can also be gas, such as carbon monoxide or other toxic substances, such as ethylene glycol (anti-freeze).

In cases where more than one weapon type was used (including multiple poisons), only the first weapon type was selected for the analysis in this report.

Figure 1.4: Comparison of Suicides and Homicides by Weapon, MA 2006



Suicides (N=455) **Homicides (N=194)**

Total (N=649)

- Firearms were used in 58% of homicides, but only 22% of suicides.
- See Appendix A for a complete list of weapon variables that may be included in "other" weapon.

Data Highlights for 2006:

- An average of nine suicides occurred per week in 2006, more than one each day (N=455).
- The highest suicide rate overall was among White, non-Hispanic males (N=293, 11.7/100,000).
- White, non-Hispanics had the highest suicide rate (7.9/100,000). Hispanics had the lowest suicide rate (2.7/100,000).
- The suicide rate for males (10.3/100,000) was more than twice as high as the rate for females (4.0/100,000).
- Approximately 70% of suicides occurred in a home or its surrounding area (yard, driveway, and porch).

Compared to 2005:

- The number of suicides increased by 15% for females (from N=116 in 2005 to N=133 in 2006). The rate was 3.5/100,000 in 2005 and increased to 4.0/100,000 in 2006.
- The number of suicides decreased by 9% for males from 2005 to 2006 (N=352, N=322.) The rate was 11.3/100,000 in 2005 and decreased to 10.3/100,000 in 2006.
- In 2005, the highest suicide rate was among 35-44 year olds (10.3/100,000, N= 104), but in 2006, the age group with the highest rate was 45-54 year olds (12.5/100,000, N= 122).

Compared to the U.S.:

- The age-adjusted suicide rate for males was lower in Massachusetts than the U.S. average. The U.S. age-adjusted rate for male suicides in 2006 was 18.0/100,000 in the U.S. and 10.0/100,000 in Massachusetts.
- The age-adjusted suicide rate for females was lower in Massachusetts than the U.S. average. In 2006, the U.S. age-adjusted rate for female suicides was 4.5/100,000 and 3.8/100,000 in Massachusetts.
- In 2006, Massachusetts had a lower age-adjusted rate of firearm suicides (1.5/100,000) compared to the U.S. age-adjusted rate (5.5/100,000).

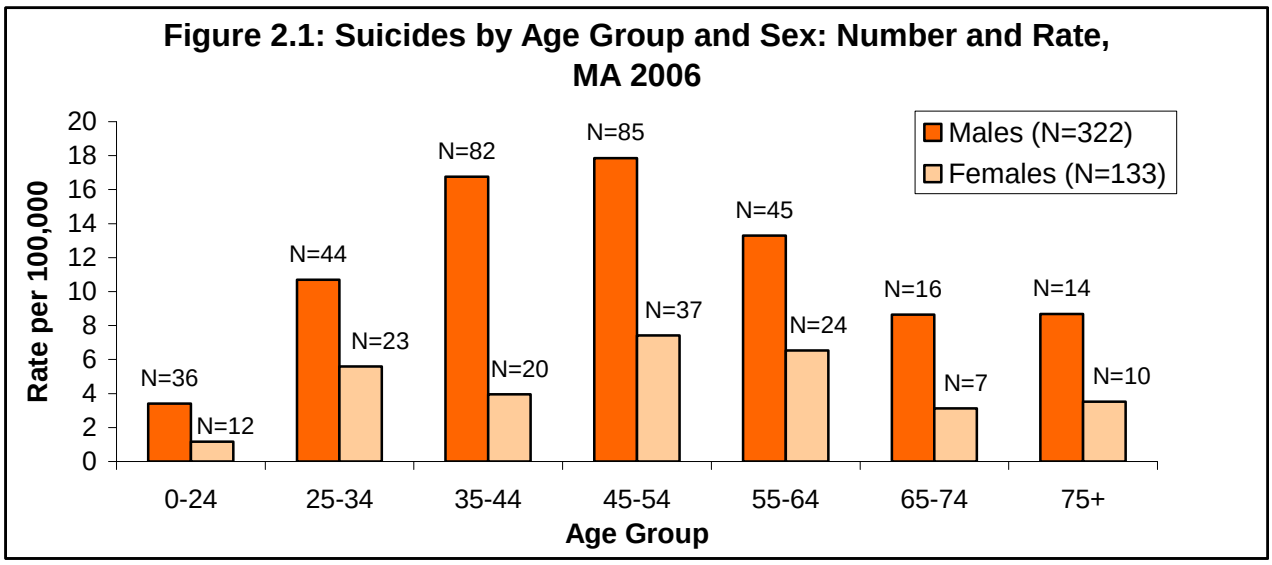
SUICIDE DEMOGRAPHICS

Table 2.1: Suicides by Demographics: Number, Percent, and Rate, MA 2006			
	N	Percent	Rate per 100,000[1]
Sex			
Male	322	70.8	10.3
Female	133	29.2	4.0
Race/Ethnicity			
White, non-Hispanic	410	90.1	7.9
Black, non-Hispanic	15	3.3	3.8
Asian, non-Hispanic	15	3.3	4.7
Hispanic	14	3.1	2.7
Other/mixed[2]	1	0.2	--
Age Group			
0-14	3	0.7	--
15-24	45	9.9	5.0
25-34	67	14.7	8.1
35-44	102	22.4	10.3
45-54	122	26.8	12.5
55-64	69	15.2	9.8
65-74	23	5.1	5.6
75-84	16	3.5	5.2
85+	8	1.8	5.9
Total	**455**	**100.0**	**7.1**

ADDITIONAL FINDINGS FOR 2006:

- The youngest suicide victim was 13 years old and the oldest was 95 years old.
- Forty-nine percent of suicides were of persons aged 35-54. The mean age was 45.0 and the median age was 45.
- Twenty-nine war veterans[3] completed suicide, which accounted for 79% of the total violent deaths among war veterans (N=61).
- Suicides in 2006 also included:
  - five victims that were homeless.
  - nine victims that completed suicide while in custody, such as jail, state institution, or foster care.
  - three victims that died at their workplace.

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rates.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.
[3] This report only includes information where the deceased was a U.S. veteran and the war in which they served was specified.



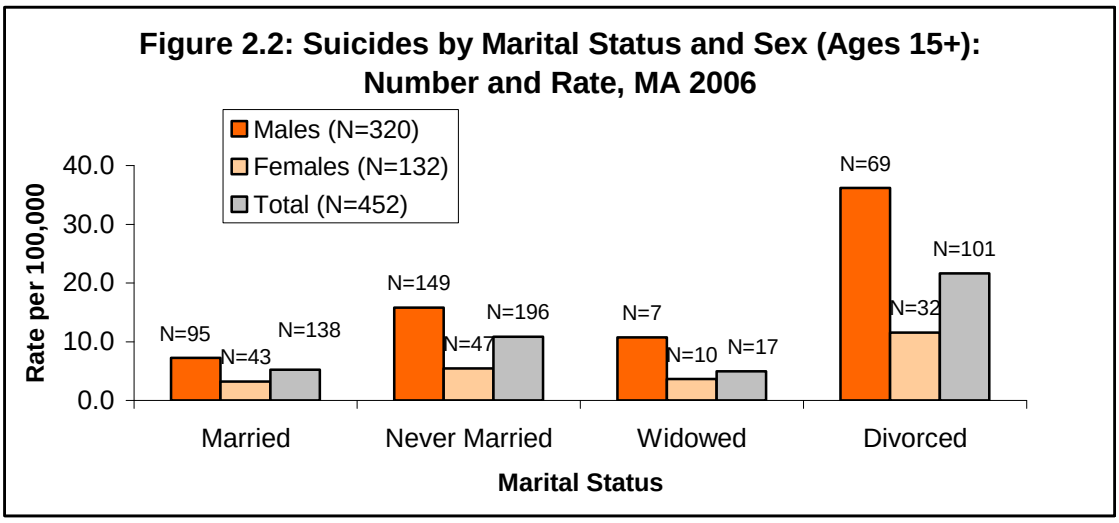
- Among youths age 15-19, the suicide rate was 2.2/100,000 (N=10), which was lower than the statewide rate of 7.1/100,000.
- The suicide rate for persons age 20-24 was 7.8/100,000 (N=35), which is higher than the statewide rate of 7.1/100,000.
- Among both males and females, the age group of 45-54 had the highest suicide rate (17.8 and 7.4 per 100,000, respectively).

Table 2.2: Suicides by Race/Ethnicity and Sex: Number, Percent, and Rate, MA 2006[1]

	Female			Male		
	N	Percent	Rate per 100,000	N	Percent	Rate per 100,000
White, non-Hispanic	117	88.0	4.4	293	91.0	11.7
Black, non-Hispanic	3	2.3	--	12	3.7	6.2
Asian, non-Hispanic	8	6.0	5.0	7	2.2	4.5
Hispanic	4	3.0	--	10	3.1	3.9
Other/mixed[2]	1	0.8	--	0	0.0	--
Total	**133**	**100.0**	**4.0**	**322**	**100.0**	**10.3**

- White, non-Hispanics had the highest rates for males (11.7/100,000). Among females, Asian, non-Hispanics had the highest suicide rate (5.0/100,000).
- There were 455 suicides; approximately 64% were White, non-Hispanic males and 26% were White, non-Hispanic females.
- Among males, Hispanics had the lowest suicide rate (3.9/100,000).

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rates.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.



- In 2006, male suicide rates were always higher than female suicide rates, regardless of marital status.
- Suicide rates were highest among divorced victims for both males (36.2/100,000) and females (11.6/100,000) and were lowest among married victims for both males (7.3/100,000) and females (3.2/100,000).

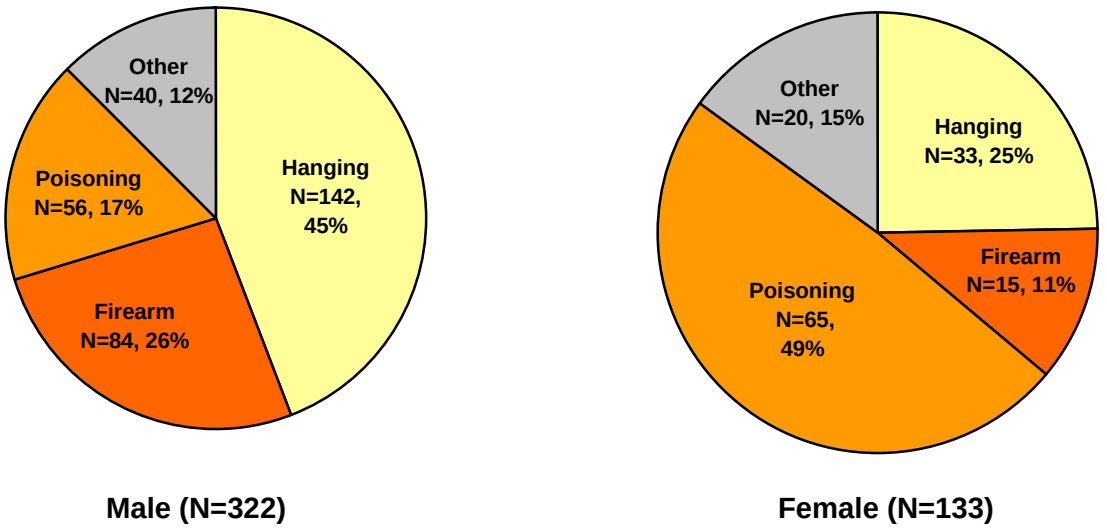
Table 2.3: Suicides (Ages 25+) by Level of Education and Sex: Number, Percent, and Total Rate, MA 2006

	Female		Male		Total		
Years of Education	N	Percent	N	Percent	N	Percent	Rate per 100,000[1]
0-8	5	4.1	9	3.2	14	3.4	6.4
9-11	0	0.0	22	7.7	22	5.4	13.9[2]
12	47	38.8	144	50.5	191	47.0	
13-16	49	40.5	86	30.2	135	33.3	7.0
17+	20	16.5	24	8.4	44	10.8	6.5
Total[3]	**121**	**100.0**	**285**	**100.0**	**406**	**100.0**	**9.4**

- The highest suicide rate was among victims with 9-12 years of education.
- Approximately 56% of suicide victims age 25 and older had 12 or less years of education, while approximately 40% of the Massachusetts population age 25 and older has had 12 years of education or less.

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates.
[2] Grades 9 through 12 were combined to calculate rates because an appropriate denominator was not available to separate 9 to 11 grades from 12th grade.
[3] There was 1 victim whose data element for level of education was unknown.

Figure 2.3: Suicide by Type of Weapon and Sex, MA 2006



Total (N=455)

- The above figure shows the three most common weapon types used. Other weapon types are combined into "Other," which includes sharp instruments, falls, drowning, other transport vehicle (e.g. train), fire or burns, and non-powder guns. See Appendix A for a complete list of weapons.
- In this report, "hanging/strangulation/suffocation" is simply referred to as "hanging." This was the most common suicide method, accounting for 38% of suicides.
- Among females, poisoning/drug overdose was the most common method (49%), followed by hanging (25%).
- For males, hanging was the most common method (44%). The second most common method involved the use of a firearm (26%), followed by poisoning/drug overdose (17%).
- Of suicide poisoning deaths, 46% (N=56) were due to the ingestion of more than one poison/drug.
- Of the total suicide deaths by poisoning/drug overdose (N=121):
  - 79% (N=95) were due to the ingestion of a substance, including street/recreation drugs, alcohol, pharmaceutical prescriptions, and over-the counter medications.
  - 15% (N=18) were due to carbon monoxide poisoning.
  - 7% (N=8) were due to another poison.

METHODS OF SUICIDES

Table 2.4: Suicide Method by Age Group: Number and Percent, MA 2006												
	0-14		15-24		25-44		45-64		65+		Total	
	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent
Firearm	0	0.0	6	13.3	35	20.7	43	22.5	15	31.9	99	21.8
Poisoning	0	0.0	7	15.6	39	23.1	63	33.0	12	25.5	121	26.6
Hanging	3	100.0	27	60.0	71	42.0	60	31.4	14	29.8	175	38.5
Other[1]	0	0.0	5	11.1	24	14.2	25	13.1	6	12.8	60	13.2
Total	**3**	**100.0**	**45**	**100.0**	**169**	**100.0**	**191**	**100.0**	**47**	**100.0**	**455**	**100.0**

- Hanging was the most common method of suicide through age 44.
- Among those ages 45-64, poisoning (33%, N=63) was slightly more common than hanging (31%, N=60).
- Firearms were most commonly used among persons age 65 and over.

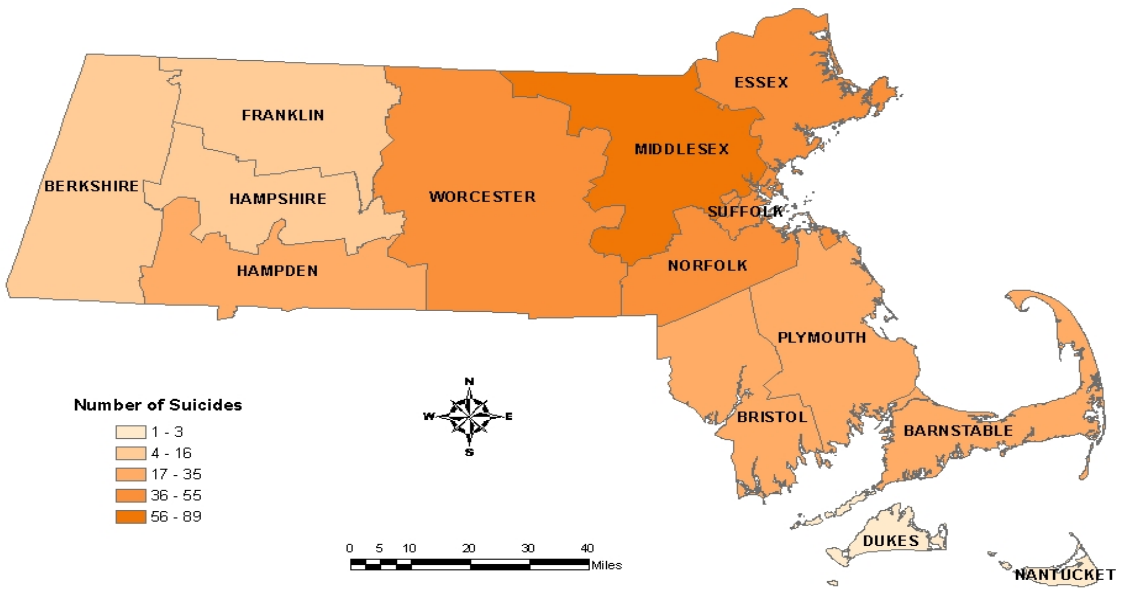
[1] Other weapon types are combined into "Other," which includes sharp instruments, falls, drowning, other transport vehicle (e.g. train), fire or burns, and non-powder guns. See Appendix A for a complete list of weapons.

Table 2.5: Suicides by County: Number, Percent, and Rate, MA 2006			
County	**N**	**Percent[1]**	**Rate per 100,000[2]**
Population: 1,000,000+			
Middlesex	89	20.5	6.1
Population: 500,000 – 1,000,000			
Norfolk	50	11.5	7.6
Worcester	55	12.6	7.0
Essex	46	10.6	6.3
Suffolk	43	9.9	6.3
Bristol	30	6.9	5.5
Population: 100,000 – 500,000			
Berkshire	16	3.7	12.2
Barnstable	26	6.0	11.6
Hampden	35	8.0	7.6
Plymouth	26	6.0	5.3
Hampshire	8	1.8	5.2
Population: <100,000			
Franklin	7	1.6	9.7
Dukes	3	0.7	--
Nantucket	1	0.2	--
Other			
Outside MA[2]	14	--	--
Unknown[2]	6	--	--
Total known MA county	**435**	**100.0**	**--**
Total	**455**	**--**	**7.1**

- Middlesex, Essex, and Worcester Counties had the highest number of suicides (N=89, 46, and 55 respectively). These three counties accounted for 44% of total suicides and 46% of the Massachusetts population.
- Among counties with a population of 500,000-1,000,000, Worcester had the highest number (N=55), but Norfolk had the highest rate (7.6/100,000). Rates ranged from 5.5/100,000 – 7.6/100,000 in these counties.
- Among counties with a population of 100,000-500,000, Hampden had the highest number (N=35) but Berkshire had the highest rate (12.2/100,000). Rates ranged from 5.2/100,000 – 12.2/100,000 in these counties. These counties accounted for 26% of suicide occurrences but 23% percent of the Massachusetts population.
- Numbers of suicides for some counties are low, therefore rates may be unstable. Caution should be exercised in interpretation of these rates.

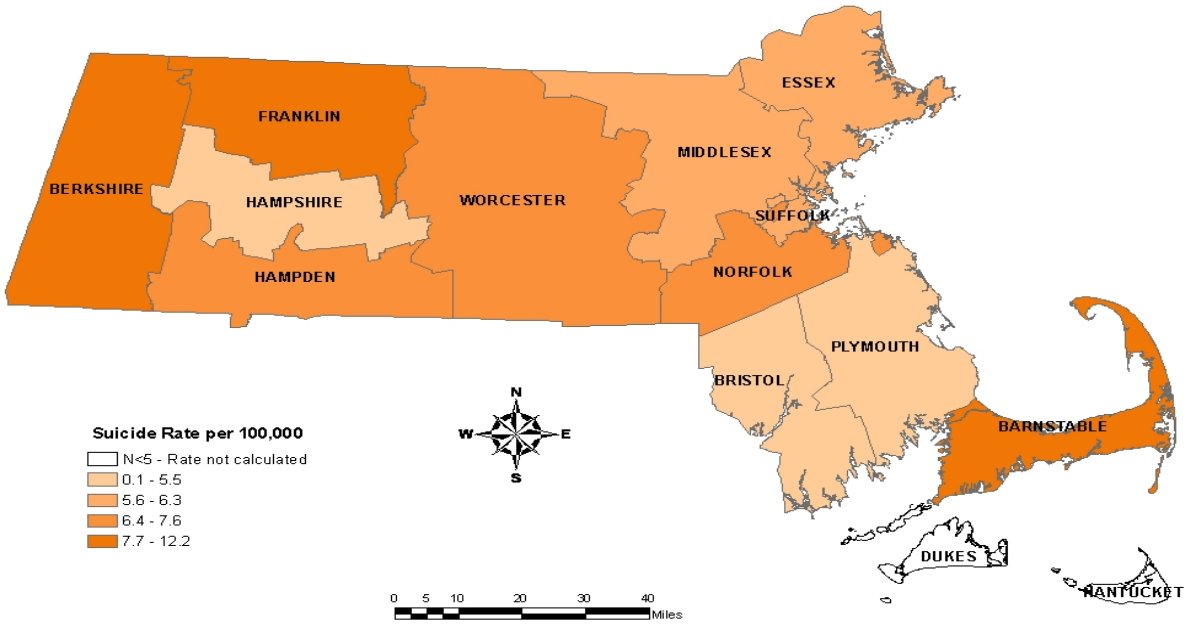
[1] Percent is based on known Massachusetts county of injury (N=435). Rate was not calculated on unknown county of injury nor out of state injuries.
[2] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. Rates may be much higher among counties with a small population. See Appendix B for age-adjusted rates.

Figure 2.4: Suicides by County: Number, MA 2006



Data sources: Massachusetts Violent death Reporting System (MAVDRS), MA Dept of Public Health
Massachusetts Executive Office of Environmental Affairs, MassGIS

Figure 2.5: Suicides by County: Rate, MA 2006



Data sources: Massachusetts Violent death Reporting System (MAVDRS), MA Dept of Public Health
Massachusetts Executive Office of Environmental Affairs, MassGIS

LOCALITY OF SUICIDES

Table 2.6: Suicides by City/Town: Number, Percent, and Rate, MA 2006			
	N	**Percent[1]**	**Rate per 100,000[2]**
Group 1: Cities/Towns over 175,000 population:			
Worcester	17	3.9	9.7
Boston	38	8.7	6.4
Total Group 1	**55**	**12.6**	**7.2**
Group 2: Cities/Towns 75,000-175,000 population:			
Quincy	10	2.3	11.0
Lynn	7	1.6	8.0
Lowell	7	1.6	6.8
Fall River	6	1.4	6.6
Cambridge	6	1.4	5.9
Springfield	8	1.8	5.3
Brockton	4	0.9	--
New Bedford	4	0.9	--
Newton	4	0.9	--
Total Group 2	**56**	**12.8**	**6.3**
Group 3: Cities/Towns 50,000-75,000 population:			
Peabody	13	3.0	25.1
Plymouth	8	1.8	14.4
Taunton	7	1.6	12.5
Chicopee	6	1.4	11.0
Haverhill	6	1.4	10.0
Waltham	5	1.1	8.4
Somerville	5	1.1	6.7
Framingham	4	0.9	--
Malden	4	0.9	--
Weymouth	4	0.9	--
Medford	3	0.7	--
Lawrence	2	0.5	--
Brookline	1	0.2	--
Total Group 3	**68**	**15.6**	**8.9**
Group 4: Cities/Towns with < 50,000 population			
Total Group 4	**257**	**58.9**	**6.4**
Other			
Outside MA	14	--	--
Unknown city/town	5	--	--
Total known MA city/town	**436**	**100.0**	**--**
Total	**455**	**--**	**7.1**

- The total suicide rate for cities with a population of 75,000-175,000 (12.8/100,000) was slightly higher than the total rate for cities with a population over 175,000 (12.6/100,000) and the total rate of cities with a population of 50,000-75,000 (15.6/100,000).
- Between the two cities with a population over 175,000, Boston had the higher number (N=38, 6.4/100,000), but Worcester had the higher rate of suicide (9.7/100,000, N=17).
- Among cities with a population of 75,000-175,000, Quincy had the highest number (N=10) and the highest rate (11.0/100,000) of suicide.

[1] Percent is based on known Massachusetts city of injury (N=436). Rate was not calculated on unknown city of injury nor out of state injuries.
[2] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates.

Table 2.7: Places Where Suicides Occur: Number and Percent, MA 2006		
	N	Percent[1]
Buildings and surroundings:		
House, apartment, including driveway, porch, yard	306	69.5
Hotel/motel	17	3.9
Jail, prison, detention facility	10	2.3
Hospital, medical facility or nursing home	3	0.7
Supervised residential facility	1	0.2
Office building	2	0.5
Other commercial establishment	1	0.2
Bar or nightclub	2	0.5
Transportation utilities:		
Motor vehicle (excl. school and public transportation)	18	4.1
Street/road, sidewalk, alley	8	1.8
Public transportation or station	4	0.9
Parking lot/public parking garage	2	0.5
Railroad track	10	2.3
Outdoor and recreational areas:		
Natural area	38	8.6
Park, playground, public use area	5	1.1
Educational facilities:		
College/University	3	0.7
Other:		
Other	9	2.0
Industrial or construction areas	1	0.2
Unknown	**15**	**--**
Total Suicides	**455**	**100.0**

- The majority (70%) of suicides occurred in a house, apartment, or its surroundings (yard, porch, driveway).
- About 9% of suicides occurred in a natural area, such as woods or rivers.
- Ten suicides occurred in a jail, prison or detention facility.[2]
- Eighteen suicides occurred in a motor vehicle and seven of those were due to carbon monoxide poisoning.

[1] Percent is based on number of suicides with known place where suicide occurred (N=440).
[2] Suicides occurring in jail are not necessarily the same suicide victims who were injured "in custody." The "in custody" variable includes those victims who are involuntarily committed to a psychiatric facility, in a foster home, and those who were injured prior to being arrested.

SUICIDE CIRCUMSTANCES

Circumstance data included in analysis are for those victims where at least one circumstance category was known. Since some victims may have multiple circumstances noted, percent totals will not sum to 100%.

Table 2.8: Circumstances of Suicides: Number and Percent, MA 2006

	N	Percent
Total victims with known circumstances	**403**	**--**
Health Characteristics		
Current mental health problem	185	45.9
Prior mental health treatment	118	29.3
Current treatment for mental illness	111	27.5
Alcohol problem/other substance problem	121	30.0
History of suicide attempts	75	18.6
Physical health problem[1]	27	6.7
Relationship Characteristics		
Intimate partner problem	80	19.9
Other relationship problem	30	7.4
Other death of friend or family in past five years	13	3.2
Perpetrator of interpersonal violence past month	12	3.0
Life Stressors		
Financial problem	37	9.2
Job problem	36	8.9
Recent criminal legal problem	21	5.2
Other legal problems	12	3.0
Event Characteristics		
Current depressed mood	94	23.3
Person left a suicide note	157	39.0
Disclosed intent to commit suicide	81	20.1
Crisis in past two weeks	42	10.4

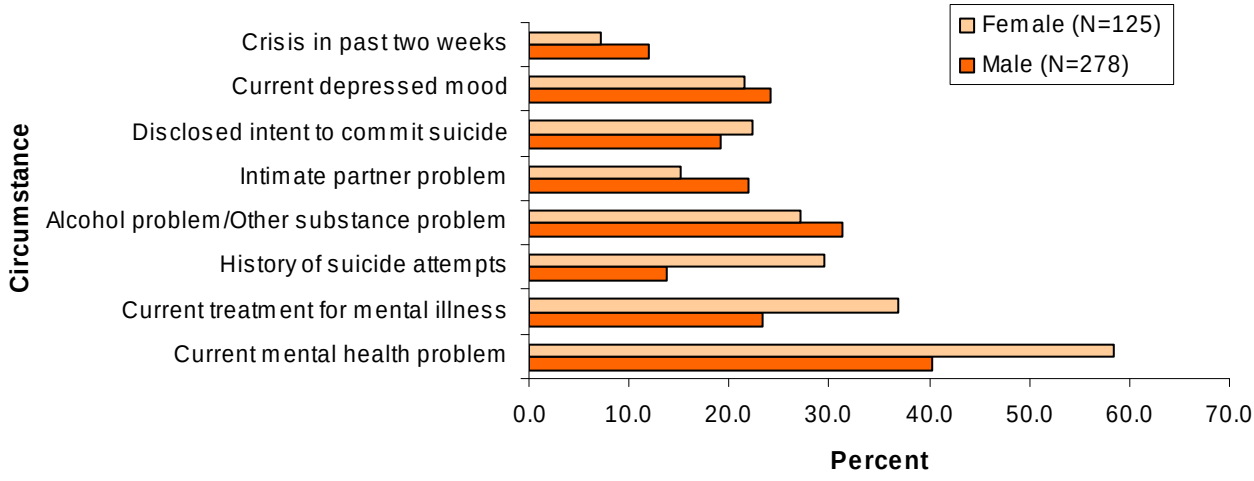
- There were a total of 322 males and 133 females who committed suicide. Eighty-nine percent of these victims (N= 403) had information about circumstances noted.
- Forty-six percent of suicide victims had a current mental health problem. This is a broad category and includes victims who have been diagnosed by a health professional as having a psychiatric condition and victims who were prescribed antidepressants or other psychiatric medication.
- Twenty-three percent of suicide victims were reported as being depressed by a family member or other witness. This does not necessarily indicate that there was a clinical diagnosis of depression or treatment for this condition.
- In 20% of suicides, victims were reported to be having problems with a current or former intimate partner including divorce, jealousy, or argument.
- Thirty-nine percent of victims left a suicide note and 20% had disclosed their intent to harm themselves prior to completing suicide.

[1] From 2003 to 2005, MAVDRS coded "physical health problem" if there was a serious physical health problem present, regardless of if it was known to have contributed directly to the suicide or not. In 2006, we began to code this variable only if there was evidence that the problem directly contributed to the suicide or if the problem was debilitating, including situations where the victim was terminally ill, bed-ridden, oxygen dependent, or receiving daily care by a third party.

Table 2.9: Top Eight Most Commonly Mentioned Suicide Circumstances by Age Group, MA 2006				
	Age Group and Rank			
Circumstance	**15 to 24**	**25 to 44**	**45 to 64**	**65 and over**
Current mental health problem	**1**	**1**	**1**	**2**
Prior mental health treatment	**2**	**4**	**3**	**5**
Alcohol /Other substance problem	**3**	**2**	**3**	**--**
Current treatment for mental illness	**4**	**4**	**5**	**5**
Person left a suicide note	**5**	**3**	**2**	**1**
Disclosed intent to commit suicide	**5**	**--**	**8**	**7**
Current depressed mood	**7**	**7**	**6**	**3**
History of suicide attempts	**8**	**8**	**7**	**--**
Intimate partner problem	**--**	**6**	**--**	**--**
Physical health problem[1]	**--**	**--**	**--**	**4**

- Numerical rank (1-8) was determined by frequency of mention. Circumstances with the same frequencies were both given the lower rank number.
- Through age 64, mental illness, depression, or substance abuse were most frequently noted.
- For older adults 65 and over, a physical health problem was noted in 29% of cases.[1]

Figure 2.6: Commonly Mentioned Circumstances of Suicides with Known Information by Sex, MA 2006



- Information about suicide circumstances was available for 89% (N=403) of all suicides; 86% of males (N= 278) and 94% (N= 125) of females.
- Females were more likely than males to have a history of suicide attempts, disclosure of intent to commit suicide, a current mental health problem and/or treatment for a mental health disorder noted.
- A larger percentage of males were reported to have an intimate partner problem, a crisis in the past two weeks, a current depressed mood, and alcohol or substance problems more frequently than females.

[1] From 2003 to 2005, MAVDRS coded "Physical health problem" if there was a serious physical health problem present, regardless if it contributed directly to the suicide or not. In 2006, we began to code this variable only if there was evidence that the problem directly contributed to the suicide or if the problem was debilitating, including situations where the victim was terminally ill, bed-ridden, oxygen dependent, or receiving daily care by a third party.

Table 2.10: Toxicology Results of Suicide Victims: Number and Percent, MA 2006[1]				
	Victims Tested (Total Suicide Victims=455)		Victims Tested with Positive Results	
	N	Percent	N	Percent
Alcohol	412	90.5	144	35.0
Cocaine	412	90.5	41	10.0
Opioids	410	90.1	63	15.4
Marijuana	315	69.2	19	6.0

- Of the 455 suicide victims in Massachusetts in 2006, 412 (91%) were tested for blood alcohol concentration, 412 (91%) were tested for cocaine, 410 (90%) were tested for opioids, and 315 (69%) were tested for marijuana. The above table details the number and percent of victims that tested positive for those substances.

- In addition, 84% of victims (N=383) were also tested for other substances, such as benzodiazepines, anti-psychotics, over-the-counter drugs, and carboxyhemoglobin (carbon monoxide). Of those tested, 36% (N=138) were positive for another substance. Tests for other substances may vary based upon the Medical Examiner's determination of need or clinical relevance.

Table 2.11: Blood Alcohol Concentration of Suicide Victims Tested by Age Group: Number and Percent, MA 2006[1]										
	Age Group									
	< 21		21-44		45-64		65+		Total	
BAC %[2]	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent
0.0 – 0.04[3]	5	25.0	68	38.0	63	36.4	13	32.5	149	36.2
0.041 - 0.079	1	5.0	7	3.9	4	2.3	1	2.5	13	3.2
0.08 and over	2	10.0	32	17.9	26	15.0	5	12.5	65	15.8
Unknown[4]	12	60.0	72	40.2	80	46.2	21	52.5	185	44.9
Total	**20**	**100.0**	**179**	**100.0**	**173**	**100.0**	**40**	**100.0**	**412**	**100.0**

- The above table only refers to those victims who were tested for Blood Alcohol Concentration (N=412). Ninety-one percent of suicide victims were tested for Blood Alcohol Concentration (BAC).

- BAC in the range of 0.0 - 0.04 could be due to decomposition effects and does not necessarily reflect alcohol ingestion. Victims with a BAC in this range comprise 36% of the total. These results must be interpreted with caution due to uncertainty of the cause of the elevated result.

- Among suicide victims where BAC was tested, 15% (N=3) of victims less than age 21 had a BAC over 0.04.Twenty-two percent of victims ages 21-44 had a BAC over 0.04. Among victims ages 45-64, 17% had a BAC over 0.04, and among victims aged 65 and over, 15% had a BAC over 0.04.

- Sixteen percent (N=65) of all suicide victims who were tested had a BAC of 0.08 and over, which is over the legal limit for operating a motor vehicle in Massachusetts.

[1] Caution should be used in interpreting these numbers as the table only reflects victims that were tested for these substances and not all victims were tested.
[2] Caution should be used when interpreting BAC due to variation in time among ingestion of alcohol, time of death, and drawing of blood for testing which will affect the outcome of the test.
[3] BAC of 0.04% or less could be due to decomposition, rather than ingestion of alcohol.
[4] Unknown numbers are those where the victim was tested, but the results were not available at the time of abstraction.

Section 3: Homicides in Massachusetts

Data Highlights for 2006:

- Homicides claimed an average of four lives per week (N=194) in 2006.
- Black, non-Hispanics had the highest homicide rate (20.6/100,000) compared to all other races, which ranged from 1.4 - 6.6/100,000.
- Black, non-Hispanic males had a homicide rate of 38.4/100,000.
- The homicide rate of males (5.0/100,000) was more than 4 times higher than the rate of females (1.2/100,000).
- In 2006, over half of homicides (58%) in Massachusetts involved firearms. The total number of homicides by firearms was 112.

Compared to 2005:

- The number of homicides increased by a count of 13 from 2005 (N=181) to 2006 (N= 194).
- The number of homicides increased by a count of three for males from 2005 (N=152) to 2006 (N=155).
- For females, the number of homicides increased by a count of 10 from 2005 (N=29) to 2006 (N=39).

Compared to the U.S.:

- Massachusetts had a lower age-adjusted homicide rate in 2006 (3.1/100,000) than the U.S. age-adjusted rate for homicides (6.2/100,000).
- In 2006, Massachusetts had an age-adjusted homicide rate for males (4.9/100,000) that was two times lower than that of the U.S. rate (9.7/100,000).
- The Massachusetts age-adjusted rate for female homicides in 2006 (1.2/100,000) was more than two times lower than that of the U.S. age-adjusted rate for female homicides (2.6/100,000).
- Massachusetts had an age-adjusted rate for black, non-Hispanic males (38.4/100,000) that was slightly lower than the U.S. age-adjusted rate (39.09/100,000) in 2006.

DEMOGRAPHICS OF HOMICIDE VICTIMS

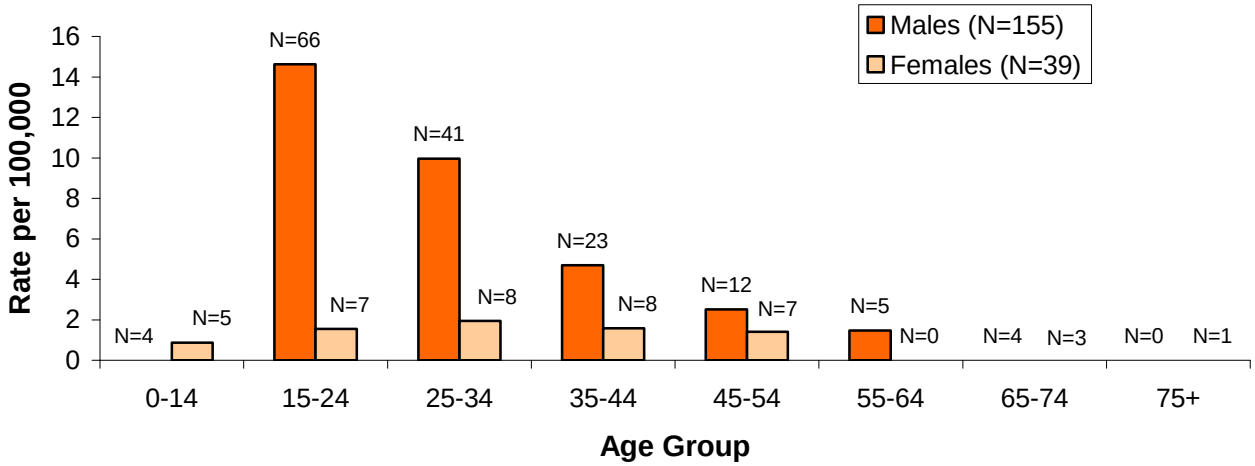
Table 3.1: Homicides by Demographics: Number, Percent, and Rate, MA 2006			
	N	**Percent**	**Rate per 100,000[1]**
Sex			
Male	155	79.9	5.0
Female	39	20.1	1.2
Race/Ethnicity			
White, non-Hispanic	71	36.6	1.4
Black, non-Hispanic	82	42.3	20.6
Asian, non-Hispanic	4	2.1	--
Hispanic	34	17.5	6.6
Other/mixed[2]	3	1.5	--
Age Group			
0-14	9	4.6	0.8
15-24	73	37.6	8.1
25-34	49	25.3	6.0
35-44	31	16.0	3.1
45-54	19	9.8	1.9
55-64	5	2.6	0.7
65-74	7	3.6	1.7
75-84	0	0.0	0.0
85+	1	0.5	--
Total	**194**	**100.0**	**3.0**

ADDITIONAL FINDINGS FOR 2006

- The youngest homicide victim was two months old and the oldest was 92 years old. The mean age for homicide victims was 30.8 and the median age was 25.
- Forty-two percent of all homicide victims were age 24 or younger and two-thirds were age 34 or younger.
- Five war veterans[3] were victims of a homicide.
- Homicides in 2006 included:
  - five victims that were homeless.
  - eleven victims that died at their workplace.
  - no victims that died in custody, such as jail, state institution, or foster care.
- Black, non-Hispanics accounted for approximately 42% of homicide victims, but make up only 6% of the Massachusetts population. Hispanics accounted for about 18% of homicide victims and make up only 8% of the Massachusetts population.

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rates.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.
[3] This report only includes information where the deceased was a U.S. veteran **and** the war in which they served was specified.

Figure 3.1: Homicides by Age Group and Sex: Number and Rate, MA 2006



- The highest homicide rate by age group was among 15-24 year olds (8.1/100,000, N=73)).
  - The homicide rate for ages 15-19 was 6.2/100,000 (N=28), which was two times higher than the statewide rate of 3.0/100,000.
  - The homicide rate for ages 20-24 was 10.0/100,000 (N=45), which was three times higher than the statewide rate of 3.0/100,000.
- Males age 15-24 had the highest homicide rate (14.6/100,000, N=66), which was nearly five times higher than the statewide rate of 3.0/100,000.
- Males age 25-34 years (10.0/100,000) had the second highest homicide rate.
- For females, there was less variability in rates across age groups, with rates ranging from 0.0 to 1.9/100,000 across all age groups.

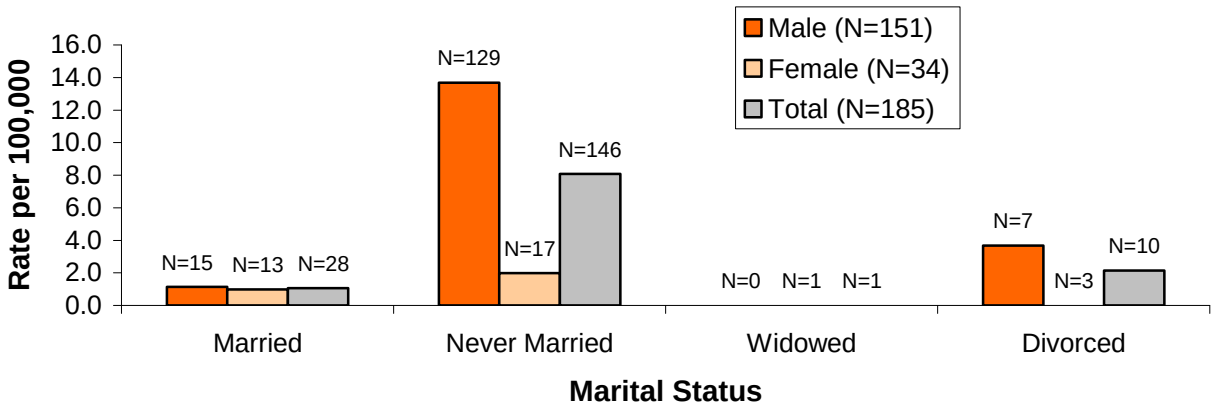
Table 3.2: Homicides by Race/Ethnicity and Sex: Number, Percent, and Rate, MA 2006

	Female			Male		
	N	Percent	Rate per 100,000[1]	N	Percent	Rate per 100,000[1]
White, non-Hispanic	26	66.7	1.0	45	29.0	1.8
Black, non-Hispanic	8	20.5	3.9	74	47.7	38.4
Asian, non-Hispanic	1	2.6	--	3	1.9	--
Hispanic	3	7.7	--	31	20.0	12.1
Other/mixed[2]	1	2.6	--	2	1.3	--
Total	**39**	**100.0**	**1.2**	**155**	**100.0**	**5.0**

- Black, non-Hispanics had the highest homicide rate for males (38.4/100,000) and females (3.9/100,000).

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for crude and/or age-adjusted rates.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.

Figure 3.2: Homicides by Marital Status and Sex (Ages 15+): Number and Rate, MA 2006[1]



- Homicide rates for males were higher than rates for females, regardless of marital status with the exception of widowed, where rates are not calculated due to small numbers.
- Among males and females, homicide rates and numbers were highest among those who were never married (13.7/100,000, N=129 and 2.0/100,000, N=17, respectively).
- Males who were never married had a homicide rate 6.9 times higher than the rate of females who were never married.
- Homicides among widowed persons had small numbers, therefore rates could not be calculated. Among homicide victims who were married, never married, or divorced, rates were lowest among married persons.

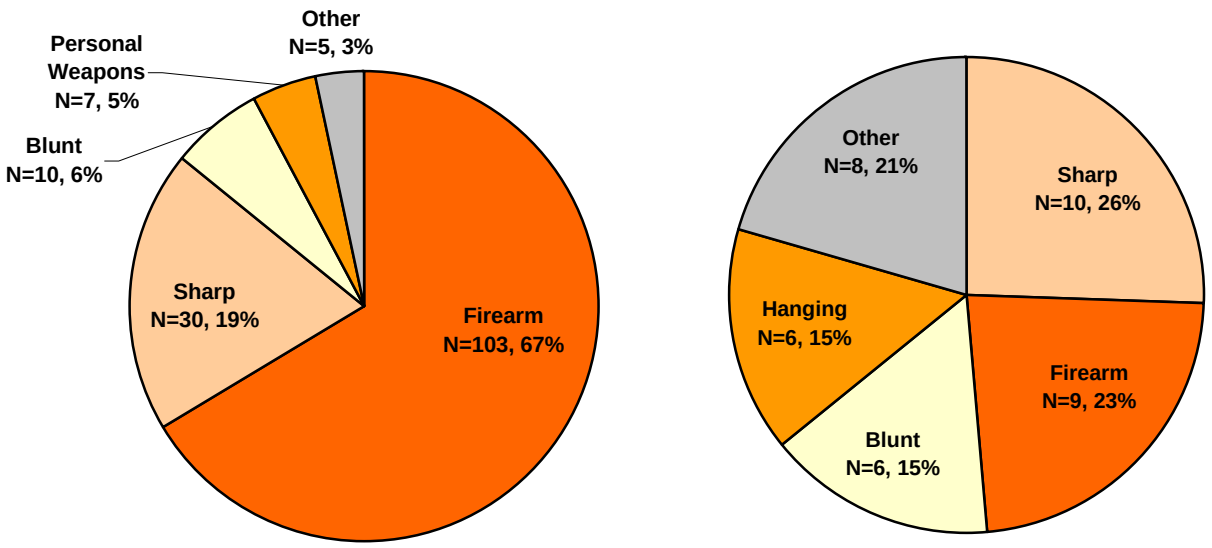
Table 3.3: Homicides (Ages 25+) by Level of Education and Sex: Number, Percent, and Total Rate, MA 2006

Years of Education	Female		Male		Total		
	N	Percent	N	Percent	N	Percent	Rate per 100,000[1]
0-8	2	7.7	5	5.9	7	6.3	3.2
9-11	2	7.7	12	14.1	14	12.6	5.1[2]
12	13	50.0	52	61.2	65	58.6	
13-16	8	30.8	16	18.8	24	21.7	1.3
17+	1	3.8	0	0.0	1	0.9	--
Total[3]	**26**	**100.0**	**85**	**100.0**	**111**	**100.0**	**2.6**

- Among homicide victims ages 25 and older, the highest homicide rate was among victims with 9-12 years of education (4.4/100,000).

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for crude and/or age-adjusted rates.
[2] Grades 9 through 12 were combined to calculate rates because an appropriate denominator was not available to separate 9 to 11 grades from 12th grade.
[3] There was one victim whose level of education was unknown.

Figure 3.3: Homicides by Type of Weapon and Sex, MA 2006



Male (N= 155) **Female (N=39)**

Total (N=194)

- Firearms were the leading method of homicide and accounted for 58% of the total homicides (N=112), followed by sharp instruments, such as a knife (21%, N=40).
- Firearms were the most commonly used weapon for male homicide deaths, and accounted for 66% of male homicides (N=103), followed by sharp instruments (19%, N=30), and blunt instruments (6%, N=10).
- Among females, sharp instruments were the most commonly used weapon and accounted for 26% of female homicides (N=10), followed by firearms (23%, N=9).
- Asphyxiation deaths are grouped together in NVDRS as "hanging/strangulation/suffocation." For purposes of this report, these deaths are referred to as "hanging." In homicide cases, this most frequently refers to manual strangulation.
- "Other" weapons include "personal weapons" which are from bodily assaults (such as hands and feet), hanging (such as strangulation), fire/burns, falls, neglect, and other weapons. See Appendix A for a complete list of weapon variables.
- There were two homicide victims that died due to two or more types of weapons. Each weapon contributed equally to the death; however, for the analysis, the first weapon type was selected. Of the victims who died as a result of multiple weapons:
  - one victim died as a result of a combination of a sharp instrument and a blunt instrument.
  - one victim died from a sharp instrument combined with asphyxiation/strangulation.

Table 3.4: Homicide Weapons by Age Group: Number and Percent, MA 2006												
	0-14		15-24		25-44		45-64		65+		Total	
Weapon	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**
Firearm	3	33.3	59	80.8	44	55.0	6	25.0	0	0.0	112	57.7
Sharp instrument	0	0.0	9	12.3	18	22.5	7	29.2	6	75.0	40	20.6
Other[1]	6	66.7	5	6.8	18	22.5	11	45.8	2	25.0	42	21.6
Total	**9**	**100.0**	**73**	**100.0**	**80**	**100.0**	**24**	**100.0**	**8**	**100.0**	**194**	**100.0**

- Firearms were the most common weapon of homicide for the age groups of 15-24 (81%) and 25-44 years old (55%). Sharp instruments were the second most common method (12% and 23%, respectively).
- For persons 45-64, sharp instruments (29%) and firearms (25%) were the most common methods.
- For persons 65 and older, sharp instruments (75%) were the most common method.

Table 3.5 includes the total number of firearms used in homicide incidents. Multiple firearms might be used in one incident, or one firearm may be used in an incident where multiple persons were killed.

Table 3.5: Type of Firearm Used in Homicides: Number and Percent, MA 2006		
	N	**Percent**
Firearms Used In Homicides	114	100.0
Known Information	78	68.4
Unknown information	36	31.6
Firearms with known information	**78**	**100.0**
Handgun	72	92.3
Semi-automatic pistol	19	26.4
Revolver	14	19.4
Unknown Type	39	54.2
Rifle	2	2.6
Shotgun	3	3.8
Other gun	1	1.3
Firearms with known information	**78**	**100.0**

- Among a total of 114 firearms associated with homicide incidents, 78 (68%) had information about the type of firearm used.
- Handguns were the most firearm type of firearm used in homicides. Handguns were used in 92% of homicides where firearm information was known. Fifty-four percent of these handguns were of unknown type.

[1] "Other" weapon includes personal weapons (which are from bodily assaults, such as hands and feet), hanging (such as strangulation), fire/burns, falls, neglect, and other weapons. See Appendix A for a complete list of weapon variables.

Table 3.6: Homicides by County: Number, Percent, and Rate, MA 2006			
County	**N**	**Percent[1]**	**Rate per 100,000[2]**
Population: 1,000,000+			
Middlesex	26	13.5	1.8
Population: 500,000 – 1,000,000			
Suffolk	77	40.1	11.2
Bristol	15	7.8	2.8
Essex	15	7.8	2.0
Worcester	10	5.2	1.3
Norfolk	5	2.6	0.8
Population: 100,000 – 500,000			
Hampden	23	12.0	5.0
Plymouth	15	7.8	3.0
Barnstable	4	2.1	--
Berkshire	2	1.0	--
Hampshire	0	0.0	0.0
Population: <100,000			
Franklin	0	0.0	0.0
Dukes	0	0.0	0.0
Nantucket	0	0.0	0.0
Other			
Outside MA[1]	2	0	--
Unknown[1]	0	--	--
Total known MA county	**192**	**100.0**	**--**
Total	**194**	**--**	**3.0**

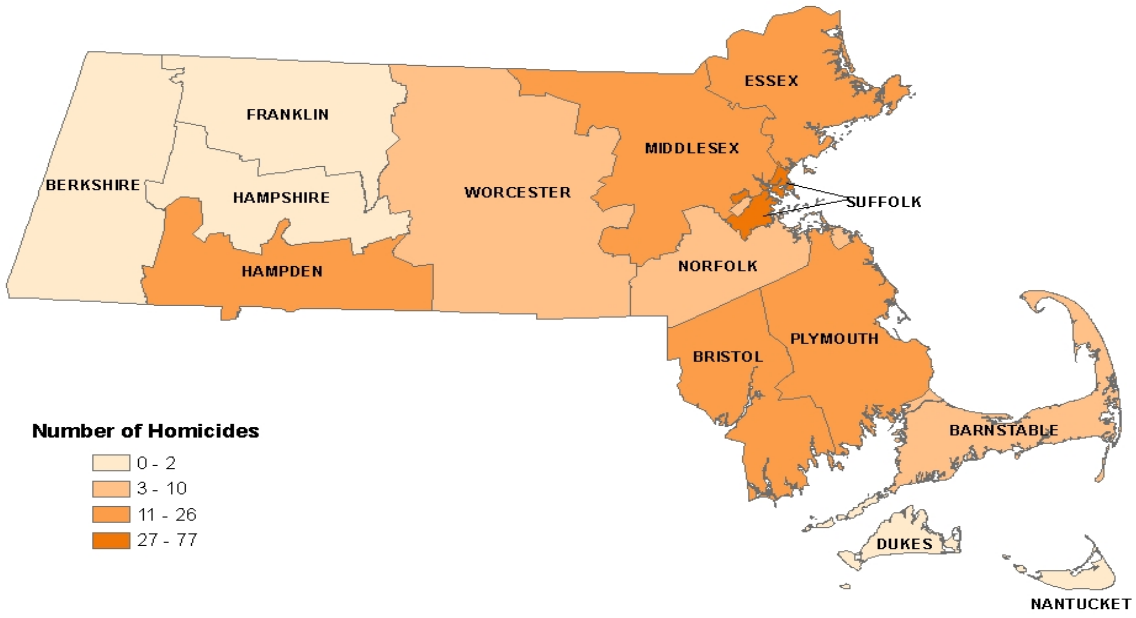
- Among all counties, Suffolk County had the highest homicide number and rate (N=77, 11.2/100,000) and accounted for 40% of deaths, followed by Hampden County (N=23, 5.0/100,000) accounting for 12% of deaths. The homicide rate of Suffolk County was 2.2 times higher than Hampden County.

- Among counties with a population of 500,000-1,000,000, Suffolk County, which includes Boston, had the highest number and rate. While 53% of the Massachusetts population lives in these counties, 64% of all homicides occurred here.

- Among counties with a population of 100,000-500,000, Hampden County, which includes Springfield, had the highest number and rate (N=23, 5.0/100,000).

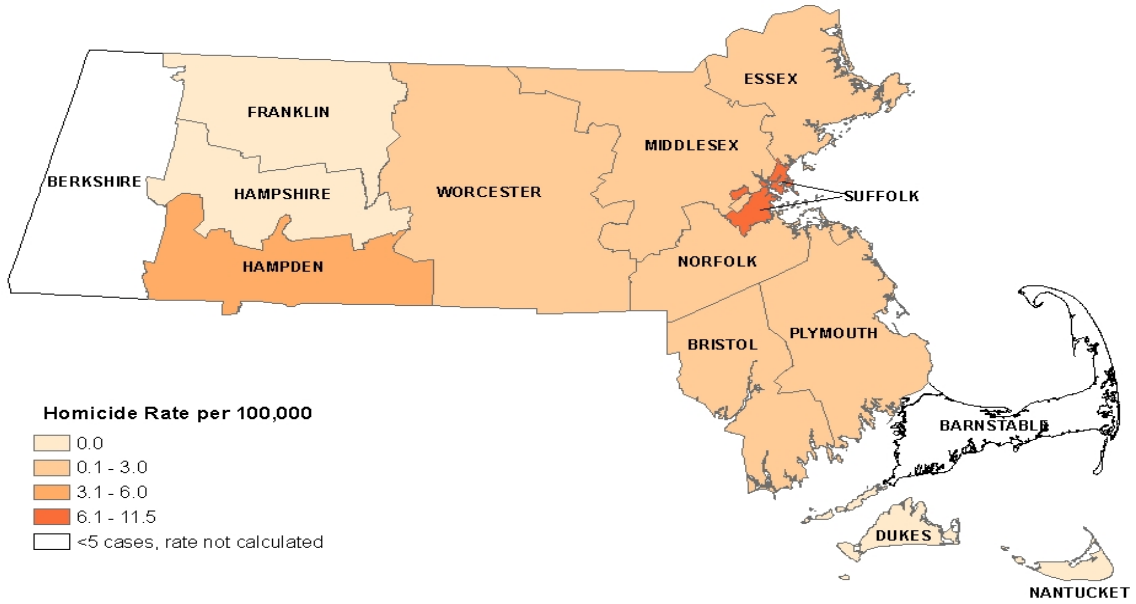
[1] Percent is based on known Massachusetts county of injury (N=192). Rate was not calculated on unknown county of injury nor out of state injuries. Out of state homicides are those homicide incidents that occurred in another state, but the victim was transported to Massachusetts where they died.
[2] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. Rates may be much higher among counties with small a population. See Appendix B for age-adjusted rates.

Figure 3.4: Homicides by County: Number, MA 2006



Data Sources: Massachusetts Violent Death Reporting System (MAVDRS), Massachusetts Department of Public Health; Massachusetts Executive Office of Environmental Affairs, MassGIS

Figure 3.5: Homicides by County: Rate, MA 2006



Data Sources: Massachusetts Violent Death Reporting System (MAVDRS), Massachusetts Department of Public Health; Massachusetts Executive Office of Environmental Affairs, MassGIS

Table 3.7: Homicides by City/Town: Number, Percent, and Rate, MA 2006			
	N	Percent[1]	Rate per 100,000[2]
Group 1: Cities/Towns over 175,000 population:			
Boston	76	39.6	12.9
Worcester	5	2.6	2.8
Total Group 1	**81**	**42.2**	**10.6**
Group 2: Cities/Towns 75,000-175,000 population:			
Lowell	13	6.8	12.6
Springfield	15	7.8	9.9
Brockton	9	4.7	8.9
New Bedford	7	3.6	7.6
Lynn	4	2.1	4.5
Cambridge	2	1.0	--
Fall River	2	1.0	--
Quincy	2	1.0	--
Newton	1	0.5	--
Total Group 2	**55**	**28.6**	**6.1**
Group 3: Cities/Towns 50,000-75,000 population:			
Lawrence	5	2.6	7.1
Framingham	2	1.0	--
Medford	2	1.0	--
Peabody	2	1.0	--
Brookline	1	0.5	--
Chicopee	1	0.5	--
Somerville	1	0.5	--
Taunton	1	0.5	--
Haverhill	0	0.0	0.0
Malden	0	0.0	0.0
Plymouth	0	0.0	0.0
Waltham	0	0.0	0.0
Weymouth	0	0.0	0.0
Total Group 3	**15**	**7.8**	**2.0**
Group 4: Cities/Towns with < 50,000 population			
Total Group 4	**41**	**21.4**	**1.0**
Other			
Outside MA	2	--	--
Unknown City/Town	0	--	--
Total known MA city	**192**	**100.0**	**--**
Total	**194**	**--**	**3.0**

- Boston had the highest number of homicides (N=76) and the highest rate (12.9/100,000). Springfield had the second highest number (N=15) but Lowell had the second highest rate (12.6/100,000). These three cities account for more than 54% of all homicide victims, but account for 13% of the total population of Massachusetts.
- Among cities with a population of 75,000-175,000, Springfield and Lowell had the highest number and rate (N=15, 9.9/100,000 and N=13, 12.6/100,000, respectively).

[1] Percent is based on known Massachusetts city of injury (N=192). Rate was not calculated on unknown city of injury nor out of state injuries.
[2] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates.

Table 3.8: Places Where Homicides Occur: Number and Percent, MA 2006		
Location of injury	**N**	**Percent[1]**
Buildings and surroundings:		
House, apartment, including driveway, porch, yard	89	46.4
Office building	2	1.0
Abandoned house, building, or warehouse	2	1.0
Hotel/motel	1	0.5
Transportation utilities:		
Street/road, sidewalk, alley	53	27.6
Motor vehicle (excluding school bus and public transportation)	11	5.7
Parking lot/public parking garage	3	1.6
Railroad track	1	0.5
Outdoor:		
Park, playground, public use area	1	0.5
Natural area	3	1.6
Retail and entertainment:		
Bar, nightclub	7	3.6
Service station	1	0.5
Other commercial establishment	2	1.0
Other:		
Other	16	8.3
Unknown	**2**	--
Total	**194**	**100.0**

- Nearly half (46.4%) of homicides occurred in a residence (N=89).
- Almost 1/3 of homicides occurred on a street (28%).
- Homicides occurred in a motor vehicle in 6% of the incidents (N=11).
- Homicides occurred in a bar or nightclub in 4% of the incidents (N=7).

[1] Percentages are based on the total number of cases for which location was known (N=192).

HOMICIDE CIRCUMSTANCES

Circumstance data were included for those victims where at least one circumstance category was known. Victims may have multiple circumstances noted so percent totals will not sum to 100%.

Table 3.9 : Circumstances of Homicide: Number and Percent, MA 2006[1]

	N	Percent
Total victims with known circumstances	**118**	**--**
Circumstance		
Argument	48	40.7
Precipitated by another crime	34	28.8
▪ Precipitating crime was in progress at time of homicide	21	17.8
Intimate partner violence related	17	14.4
Drug involvement	11	9.3
Argument over money/property	8	6.8
Jealousy (lovers' triangle)	9	7.6
Gang related	7	5.9
Brawl (mutual physical fight)	5	4.2

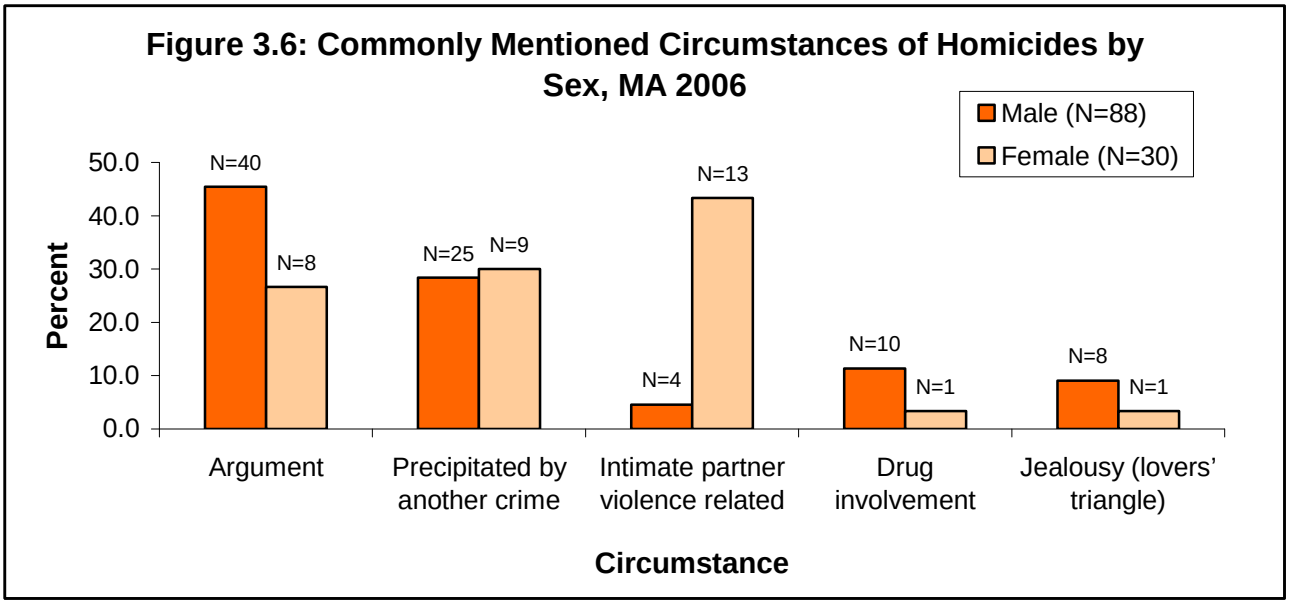
- Among 194 homicide victims, 61% (N=118) had at least one circumstance known.
- Forty-one percent of homicides where at least one circumstance was known were precipitated by an argument, abuse, or conflict. This excludes those circumstances that can be counted in intimate partner-related, gang-related, drug-related, or argument over money/property/drugs.
- Fourteen percent of homicides where at least one circumstance was known involved intimate partner violence (N=17).
- Among all homicides that had information about circumstances, eleven were drug-related (9%).
- Over 1/4 of homicides (29%) were precipitated by another crime, i.e. the homicide occurred as a result of another felony and homicide was not the primary intent. Those crimes include robbery, drug trade, burglary, arson, and assault.
- There were no deaths of police officers on duty, mercy killings, or hate crime fatalities reported to MAVDRS in 2006.

[1] Circumstances were not included for counts less than five.

Table 3.10: Homicide Circumstances by Age Group: Number and Percent, MA 2006		
	N	**Percent[1]**
Age 15 to 24		
Total number of victims	**73**	**--**
Victims with known information	**32**	**44.0**
Argument	11	34.4
Precipitated by another crime	10	31.3
▪ Precipitating crime was in progress at time of homicide	6	18.8
Gang-related	5	15.6
Age 25 to 44		
Total number of victims	**80**	**--**
Victims with known information	**59**	**74.0**
Argument	29	49.2
Precipitated by another crime	13	22.0
▪ Precipitating crime was in progress at time of homicide	8	13.6
Intimate partner violence related	10	16.9
Drug involvement	7	11.9
Jealousy (lovers' triangle)	6	10.2
Age 45 to 64		
Total number of victims	**24**	**--**
Victims with known information	**16**	**67.0**
Argument	7	43.8
Precipitated by another crime	8	50.0
▪ Precipitating crime was in progress at time of homicide	5	31.3

- Circumstance information was known for 118 victims of homicide (61%). There were 11 victims in the 0-14 age group and 65+ age group, which is not shown on the above table due to small numbers.
- Circumstance information was available for the majority of victims aged 25-64 (67% to 74%), but only for 44% of victims 15-24 years of age.
- The most common known circumstance among homicides of victims ages 15-24 was argument, abuse, conflict (34%), followed by homicides that were precipitated by another crime (31%). Those other crimes include robbery, drug trade, burglary, arson, and assault.
- Other argument, abuse, or conflict excludes those circumstances that can be counted in intimate partner-related, gang-related, drug-related, or argument over money/property/drugs.

[1] Victims may have multiple circumstances noted so percent totals will not sum to 100%.



- There were 155 male (80%) and 39 female homicide victims (20%) for a total of 194 homicides.
- Of the 194 homicides, 57% of males (N=88) and 77% of females (N=30) had at least one circumstance known; the total number of homicides with at least one circumstances known was 118 (61%).
- Intimate partner violence contributed to 43% of female homicides and 5% of male homicides where circumstance information was known.
- The most common known circumstance for males was argument, abuse, conflict (45%) and the second most common circumstance was precipitated by another crime (28%), which includes robbery, drug trade, assault, burglary, and arson.
- For females, the most common circumstance was intimate partner violence related (43%) and the second most common circumstance was precipitated by another crime (30%), which includes robbery, and drug trade.

Table 3.11: Toxicology Results of Homicide Victims Tested: Number and Percent, MA 2006[1]				
	Victims Tested (Total Homicide Victims=194)		Victims Tested with Positive Results	
Substance	**N**	**Percent**	**N**	**Percent**
Alcohol	183	94.3	59	32.2
Cocaine	183	94.3	32	17.5
Opioid	183	94.3	14	7.7
Marijuana	136	70.1	41	30.1

- Among the 194 homicide victims, 183 (94%) were tested for alcohol, cocaine, and opioids. Seventy percent (N=136) were tested for marijuana. The above table details the number and percent of those victims who were tested and had positive results.

- Over 90% of homicide victims were tested for alcohol, cocaine, marijuana, and/or opioids. The majority of victims were not positive for any of these substances. Thirty-two percent of victims tested for alcohol were positive for alcohol; 33% of these had results of .04 or less, which may be due to decomposition rather than ingestion of alcohol.

- In addition, 167 victims (86%) were tested for other substances, such as benzodiazepines, anti-psychotics, over-the-counter drugs, and carboxyhemoglobin (carbon monoxide). Of those tested, 5% (N=9) were positive.

Table 3.12: Blood Alcohol Concentration of Homicide Victims Tested by Age Group: Number and Percent, MA 2006[1]										
	Age Group									
	< 21		21-44		45-64		65+		Total	
BAC %[2]	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**
0.0 - 0.04[3]	12	26.1	41	39.0	5	20.8	3	37.5	61	33.3
0.041 - 0.079	1	2.2	6	5.7	3	12.5	0	0.0	10	5.5
0.08 and over	4	8.7	20	19.0	4	16.7	1	12.5	29	15.8
Unknown[4]	29	63.0	38	36.2	12	50.0	4	50.0	83	45.4
Total	**46**	**100.0**	**105**	**100.0**	**24**	**100.0**	**8**	**100.0**	**183**	**100.0**

- Ninety-four percent (N=183) of homicide victims were tested for blood alcohol concentration (BAC).

- Among homicide victims where BAC was tested, 11% of victims less than age 21 had a BAC over 0.04. Twenty-five percent of victims ages 21-44 had a BAC over 0.04 and among victims ages 45-64, 29% (N=7) had a BAC over 0.04. These levels are more likely indicative of alcohol ingestion.

[1] Caution should be used in interpreting these numbers as the table only reflects victims that were tested for these substances and not all victims were tested.
[2] Caution should be used when interpreting BAC due to variation in time among ingestion of alcohol, time of death, and drawing of blood for testing which will affect the outcome of the test.
[3] BAC of 0.04% or less could be due to decomposition, rather than ingestion of alcohol.
[4] Unknown numbers are those where the victim was tested, but the results were not available at the time of abstraction.

Section 4: Deaths of Undetermined Intent in Massachusetts

Please note that an important change occurred in 2005 affecting the number of undetermined deaths in Massachusetts. Most injury deaths are referred to the MA Office of the Chief Medical Examiner (OCME) for determination of cause and intent. In May 2005, a change in the OCME policy affected the assignment of manner/intent of many poisoning deaths. Up to that point, poisoning deaths where there was no explicit evidence that the case was a suicide or homicide were assigned a manner of undetermined. With the new policy, these deaths are assigned a manner of accident/unintentional, like most other states.

Data Highlights for 2006:

- Deaths of undetermined intent claimed an average of about two lives per week in 2006 (N=85).
- In 2006, Black, non-Hispanics had the highest rate (2.8/100,000) for deaths of undetermined intent.
- The rate of undetermined intent deaths for males (1.6/100,000) was similar to the rate for females (1.1/100,000).
- Sixty-one percent of deaths of undetermined intent (N=52) were the result of poisonings/drug overdoses.
- Ninety-eight percent (N=83) of those whose deaths were of undetermined intent were tested for opioids; of these, 33% were positive.

Compared to 2005:

- The number of deaths of undetermined intent decreased by a count of three from 2005 (N=88) to 2006 (N=85).
- For deaths of undetermined intent, approximately 76% of males and 74% of females were between the ages 35-64.

Compared to the U.S.:

- In 2006, Massachusetts had a slightly lower age-adjusted rate (1.2/100,000) of undetermined intent deaths compared to the national age-adjusted rate (1.7/100,000).
- The age-adjusted rate for deaths of undetermined intent for males in 2006 was 2.2/100,000 in the U.S. and 1.5/100,000 in Massachusetts; the age-adjusted rate for deaths of undetermined intent for females was 1.2/100,000 in the U.S. and 1.0/100,000 in Massachusetts in 2006.

DEMOGRAPHICS OF DEATHS OF UNDETERMINED INTENT VICTIMS

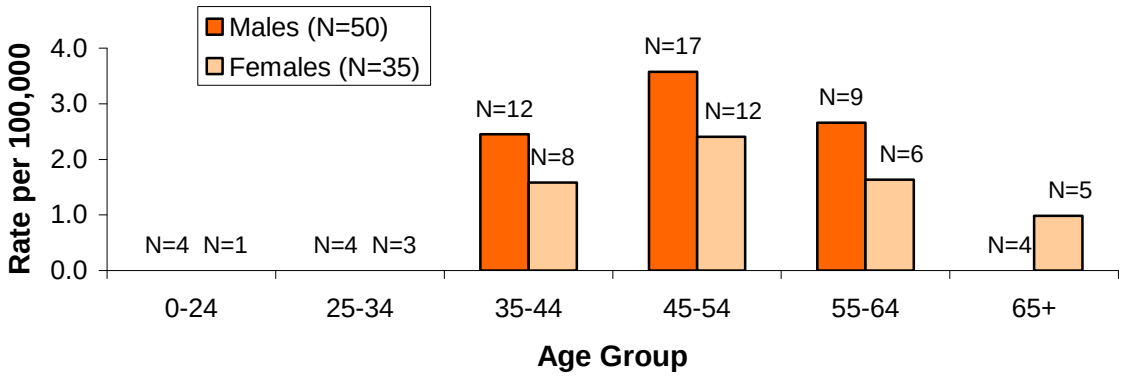
Table 4.1: Deaths of Undetermined Intent by Demographics: Number, Percent, and Rate, MA 2006			
	N	Percent	Rate per 100,000[1]
Sex			
Male	50	58.8	1.6
Female	35	41.2	1.1
Race/Ethnicity			
White, non-Hispanic	70	82.4	1.3
Black, non-Hispanic	11	12.9	2.8
Asian, non-Hispanic	1	1.2	--
Hispanic	3	3.5	--
Other/mixed[2]	0	0.0	--
Age Group			
0-14	1	1.2	--
15-24	4	4.7	--
25-34	7	8.2	0.9
35-44	20	23.5	2.0
45-54	29	34.1	3.0
55-64	15	17.6	2.1
65-74	4	4.7	--
75-84	5	5.9	1.6
85+	0	0.0	0.0
Total	**85**	**100.0**	**1.3**

ADDITIONAL FINDINGS FOR 2006

- The youngest undetermined intent victim was 14 years old and the oldest was 84 years old.
- The mean age for undetermined intent victims was 48.5 and the median age was 48.
- There were six homeless persons whose death was of undetermined intent.
- No victims of undetermined intent died in custody, such as jail, state institution, or foster care.
- There were no deaths of undetermined intent that occurred at work.
- Eleven war veterans'[3] deaths were of undetermined intent.

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rates.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.
[3] This report only includes information where the deceased was a U.S. veteran and the war in which they served was specified.

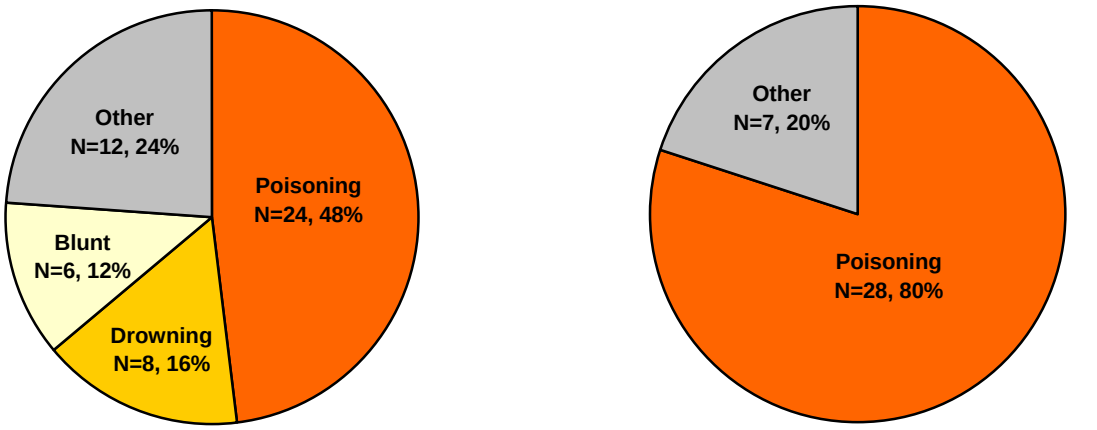
Figure 4.1: Deaths of Undetermined Intent by Age Group and Sex: Number and Rate, MA 2006



- For deaths of undetermined intent, approximately 76% of males and 74% of females were between the ages of 35 to 64.
- Persons aged 45-54 had the highest rate and number among both males (3.6/00,000, N=17) and females (2.4/100,000, N=12).
- The lowest rates of deaths of undetermined intent were among persons less than 35 years of age.
- While males had higher rates than females, sex differences were less pronounced among undetermined intent deaths than for homicide or suicide. The overall rate among males was 1.5 times higher than that of females.

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rates.

Figure 4.2: Deaths of Undetermined Intent by Type of Weapon and Sex, MA 2006



Male (N=50) **Female (N=35)**

Total (N=85)

- The above graph shows weapon categories with frequencies greater than 6. Weapon categories with 6 or fewer cases are combined into "other," which includes hanging, falls, drowning, other transport vehicle (e.g. train), and unknown weapon

- Poisonings/drug overdoses account for a majority (61%) of deaths of undetermined intent in Massachusetts in 2006 (N=52). Only one poison was counted in the weapon analysis for those victims whose cause of death included more than one poison.

- Poisoning/drug overdose was the leading weapon for deaths of undetermined intent for both males (48%, N=24) and females (80%, N=28).

- Of the poisoning deaths, 40% of victims (N=21) ingested more than one poison/drug.

- Of the poisoning/drug overdose deaths (N=52):
  - 92% (N=48) were due to the ingestion of a street/recreation drug, alcohol, pharmaceutical prescription, or over-the-counter medication.
  - 4% (N=2) were due to carbon monoxide poisoning
  - 2% (N=1) were due to the ingestion of another poison (such as insecticides or helium)
  - 2% (N=1) were due to an unknown poison

Table 4.2: Toxicology Results of Undetermined Intent Victims Tested: Number and Percent, MA 2006[1]				
	Victims Tested (Total Undetermined Intent Victims=85)		Victims Tested with Positive Results	
	N	Percent	N	Percent
Alcohol	83	97.6	28	33.7
Cocaine	82	96.5	3	3.7
Opioids	83	97.6	27	32.5
Marijuana	63	74.1	3	4.8

- Of the 85 victims of undetermined intent deaths, 83 (98%) were tested for blood alcohol concentration and opioids, 82 (97%) were tested for cocaine, and 63 (74%) were tested for marijuana.
- Ninety-two percent (N=78) of victims were tested for other substances, such as benzodiazepines, anti-psychotics, over-the-counter drugs, and carboxyhemoglobin (carbon monoxide). Of those, 46% (N= 36) tested positive for an additional substance.
- Thirty-three percent (N=27) of victims tested were positive for opioids. However, it is usually not possible to determine if the opioid was from a street drug, like heroin, or a prescription medication, such as codeine.

Table 4.3: Blood Alcohol Concentration of Undetermined Intent Victims Tested by Age Group: Number and Percent, MA 2006[1]										
	Age Group									
	< 21		21-44		45-64		65+		Total	
BAC%[2]	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent
0.0 - 0.04[3]	2	66.7	11	37.9	18	41.9	2	25.0	33	39.8
0.041 - 0.079	0	0.0	0	0.0	2	4.7	0	0.0	2	2.4
0.08 and over	0	0.0	7	24.1	8	18.6	2	25.0	17	20.5
Unknown[4]	1	33.3	11	37.9	15	34.9	4	50.0	31	37.3
Total	**3**	**100.0**	**29**	**100.0**	**43**	**100.0**	**8**	**100.0**	**83**	**100.0**

- Ninety-eight percent (N=83) of undetermined intent victims were tested for Blood Alcohol Concentration (BAC).
- Seventeen (21%) victims of an undetermined intent death had a BAC of over 0.08, all were over the age of 21. The legal limit for operating a motor vehicle in Massachusetts is 0.08.
- Forty percent of victims had a BAC in the 0.0 - 0.04 range. With BAC at these low levels, it cannot be determined if the source of the alcohol was due to the natural effects of decomposition and/or ingestion of an alcoholic beverage. Caution should be used when interpreting BAC due to variation in time between ingestion of alcohol, time of death, and drawing of blood for testing which will affect the outcome of the test.

[1] Caution should be used in interpreting these numbers as the table only reflects victims that were tested for these substances and not all victims were tested.
[2] Caution should be used when interpreting BAC due to variation in time among ingestion of alcohol, time of death, and drawing of blood for testing which will affect the outcome of the test.
[3] BAC of 0.04% or less could be due to decomposition, rather than ingestion of alcohol.
[4] Unknown numbers are those where the victim was tested, but the results were not available at the time of abstraction.

Appendix A: Technical Notes

- **Technical Notes**
- **Annual Estimates of the Population for Counties of Massachusetts, 2006**
- **Data Elements and Sources**
- **Primacy among Data Sources**
- **Circumstances**
- **Glossary**
- **Weapons**

Case Identification
Violent death cases in the MAVDRS database are first identified by reviewing the manner of death field on death certificates maintained by the Massachusetts Department of Public Health's Registry of Vital Records and Statistics (RVRS). A record is created in the MAVDRS database for any death categorized as homicide, suicide, or could not be determined. These deaths represent a preliminary violent death data file. The final data file is determined on the basis of International Classification of Diseases, Tenth Revision (ICD-10) codes for the underlying cause of death field on death certificates.

The ICD-10 codes that identify cases to be included in the NVDRS database are determined by the CDC and are listed below:

	ICD-10 Code	
Manner of Death	**Death < 1 Year after the injury**	**Death >1 year after the injury**
▪ Intentional Self-Harm	X60-X84	Y87.0
▪ Assault	X85-X99, Y00-Y09	Y87.1
▪ Undetermined Intent	Y10-Y34	Y87.2, Y89.9
▪ Unintentional Firearm	W32-W34	Y86
▪ Legal Intervention, excluding executions	Y35.0-Y-35.4, 35.6, Y35.7	Y89.0
▪ Terrorism	U01, U03	U02

Before finalizing the database, a death file maintained by the RVRS is generated for all codes meeting the ICD-10 case definition. If discrepancies occur between the ICD-10 code and the manner of death field on the death certificate, i.e., the death certificate manner indicates suicide and the ICD-10 indicates undetermined intent, effort is made to resolve the discrepancy through follow-up with the Office of Vital Records and Statistics and the Office of the Chief Medical Examiner (OCME). Cases are excluded when the ICD-10 code falls outside of the NVDRS ICD-10 case definition. In addition, a case is deleted from the database if an Affidavit and Correction of Death is submitted to Vital Records from the OCME changing the manner from homicide, suicide, or undetermined to natural or accident (unless the accident is firearm-related).

Deaths of Undetermined Intent
An important change occurred in 2005 affecting the number of undetermined deaths in Massachusetts. Most injury deaths are referred to the MA Office of the Chief Medical Examiner (OCME) for determination of cause and intent. In May 2005, a change in the OCME policy affected the assignment of manner/intent of many poisoning deaths. Up to that point, poisoning deaths, where there was no explicit evidence that the case was a suicide or homicide, were assigned a manner of undetermined. With the new policy, these deaths are assigned a manner of accident/unintentional. This change caused the number of undetermined deaths in 2005 to be substantially less than in previous years.

Veteran Status
MAVDRS collected veteran status on victims only if they were a war veteran due to the wording of the death certificate used in Massachusetts. The victim was identified as a veteran only if a war was specified under the section on the death certificate that says, "If US war veteran, specify war." In addition, this report includes occurrent deaths only (deaths occurring in Massachusetts) and thus excludes deaths from military-related actions or other causes occurring outside Massachusetts.

Calculating Rates
In calculating rates for **race, Hispanic origin, sex, age group, and county**, 2006 population estimates were based on National Center for Health Statistics, Estimates of the July 1, 2000-July 1, 2007, United States resident population from the Vintage 2007 postcensal series by year, county, age, sex, race, and Hispanic origin, prepared under a collaborative arrangement with the U.S. Census Bureau. Available on the Internet from: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm.

Age-adjusted Rate
A summary rate was designed to minimize the distortions created by differences in age distribution when comparing rates for populations with different age compositions. Age-adjusted rates are useful when comparing death rates from different populations or in the same population over time. For example, if one wished to compare the 1998 death rates between Barnstable County (Cape Cod) and Hampshire County, the age-adjusted formula would account for the fact that 24% of the Barnstable County residents were 65 years of age or older, whereas only 11% of the Hampshire County residents were in this age group. Similarly, age-adjusted rates would be useful in comparing Massachusetts to another state with a very different age distribution.

Age-adjusted rates are calculated by weighting the age-specific rates for a given year by the age distribution of the Year 2000 U.S. Standard Population. The weighted age-specific rates are then added to produce the adjusted rate for all ages combined.

Education and marital status rates were calculated using the U.S. Census Bureau's American Community Survey 2006 population found on the internet at:
http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=ACS&_submenuId=datasets_1&_lang=en&_ts=

City/town rates are calculated using 2006 population estimates from the U.S. Census Bureau's *Annual Estimates of the Population for Minor Civil Divisions in Massachusetts, Listed Alphabetically Within County: April 1, 2000 to July 1, 2007* (SUB-EST2007-05-25).

Data on the U.S. population was calculated using WISQARS, accessed April 2009. Office of Statistics and Programming, National Center for Injury Prevention and Control, CDC; Data Source: NCHS Vital Statistics System for numbers of deaths, Bureau of Census for population estimates. On the web at:
http://webappa.cdc.gov/sasweb/ncipc/mortrate10_sy.html

ANNUAL ESTIMATES OF THE POPULATION FOR COUNTIES OF MASSACHUSETTS, 2006

Annual Estimates of the Population for Counties of Massachusetts, 2006[1]		
County	**2006 Population Estimate**	**Percent of population**
Barnstable	224,816	3.5
Berkshire	131,117	2.0
Bristol	545,379	8.5
Dukes	15,515	0.2
Essex	735,958	11.4
Franklin	72,183	1.1
Hampden	460,520	7.2
Hampshire	153,471	2.4
Middlesex	1,467,016	22.8
Nantucket	10,240	0.2
Norfolk	654,753	10.2
Plymouth	493,623	7.7
Suffolk	687,610	10.7
Worcester	784,992	12.2
Total	**6,437,193**	**100.0**

[1] Annual Estimates of the Population for Counties of Massachusetts: April 1, 2000 to July 1, 2006 (CO-EST2006-01-25); Source: Population Division, U.S. Census Bureau; Release Date: March 22, 2007.

DATA ELEMENTS AND SOURCES

Data sources utilized by MAVDRS include death certificates, medical examiner records, police reports, Supplementary Homicide Reports (SHR), National Incident Based Reporting System (NIBRS) reports, emergency department records, Emergency Medical Services reports (EMS), and the Massachusetts State Police Crime Laboratory. Over 270 data elements may be collected for each incident in the database, including information on: the incident, person or persons (victim and suspect), toxicology, weapon(s), circumstances associated with a homicide or suicide, relationship between a suspect and victim, and relationship between a person and weapon. More information on the NVDRS data elements and coding protocols is available at the NVDRS website: http://www.cdc.gov/ncipc/pub-res/nvdrs-coding/VS2/default.htm.

Death certificates: Death certificates serve as an important data source for the cause of death, place and date of death, and demographic information on the victim. Also included on the death certificates are fields for injury information, including date, time, location, address of injury, and if the injury occurred at work. It is the only source used for the assignment of the ICD-10 code, as well as the official legal and public document of the death.

Medical Examiner files: Medical examiner records include toxicology reports that typically test for alcohol, cocaine, and opioids, as well as other drugs. Records will also have details on wounds and other injury circumstances.

Police Reports: Data from law enforcement agencies (city and town police reports) include demographics of victims and suspects, relationships between victims and suspects, weapons, and circumstances, as well as data from SHR and NIBRS.

SHR/NIBRS: The SHR and NIBRS are incident-based reports voluntarily submitted by local law enforcement agencies to the Federal Bureau of Investigation as part of an aggregate crime reporting system. Massachusetts cities and towns participate either in NIBRS or SHR, and approximately half of the jurisdictions currently participate in either system. The MAVDRS database includes data elements for SHR but not for NIBRS. In Massachusetts, NIBRS information is entered in police report data fields. For incidents where information is available from both police and NIBRS, information from the police takes precedence.

Crime Lab (ballistics): The Massachusetts State Police Crime Lab provides weapon and ballistics information for firearm-related deaths. Details of the Crime Lab report include make and model of the firearm, caliber or gauge, and other ballistics information.

PRIMACY AMONG DATA SOURCES

NVDRS has predetermined rules governing data source primacy when multiple sources are available for the same variable. Data sources have been ranked in terms of their likely accuracy for each data element. The source with first primacy is considered most reliable for a given variable and will be the source of choice. Lower primacy sources are used when a higher primacy source is not available. In the case of a victim's sex, for instance, primacy rules establish the death certificate as the preferred data source, OCME records as the second choice, and police records as the third choice.

NVDRS data file: Data from all sources is entered into the MAVDRS database using software and standards provided to participating states by the Centers for Disease Control and Prevention (CDC).

CIRCUMSTANCES

The list of circumstances is generated based on the manner of death assigned when the record is created. For instance, if the death certificate says "homicide," then the person abstracting data (referred to as the "Abstractor") would choose "homicide" and only homicide circumstances are available to endorse. For suicides and deaths of undetermined intent, a different list of circumstances is available to endorse. Variables collected for homicides are not the same as those for suicides or deaths of undetermined intent and vice versa.

Homicide Circumstances include the following:

Precipitated by another crime
- Nature of first other crime
- Nature of second other crime

Argument over money/property
Jealousy (lovers` triangle)
Intimate partner violence-related
Other argument, abuse, conflict
Drug involvement
Gang-related
Hate crime
Brawl (mutual physical fight)
Terrorist attack
Victim was a bystander
Victim was a police officer on duty
Victim used weapon
Intervener assisting crime victim
Mercy killing
Other (includes drive-by shooting, random violence, and mentally ill suspect)

Suicide/Undetermined Circumstances include the following:

Current depressed mood
Current mental health problem
Type of first mental illness diagnosed
Type of second mental illness diagnosed
Other mental health diagnosis
Current treatment for mental illness
Ever treated for mental illness
Alcohol problem
Other substance problem
Person left a suicide note
Disclosed intent to commit suicide
History of suicide attempts
Crisis in the past two weeks
Physical health problem
Intimate partner problem
Other relationship problem
Job problem
School problem
Financial problem
Suicide of friend or family in past 5 years
Other death of friend or family
Recent criminal legal problem
Other legal problems
Perpetrator of interpersonal violence
Victim of interpersonal violence
Other

Unintentional Firearm Circumstances include the following:

Hunting
Target shooting
Self-defensive shooting
Celebratory firing
Loading/unloading gun
Cleaning gun
Showing gun to others
Playing with gun
Thought safety was engaged
Thought unloaded: magazine disengaged
Thought gun was unloaded, other
Unintentionally pulled trigger
Bullet ricochet
Gun defect or malfunction
Fired while holstering/unholstering
Dropped gun
Fired while operating safety/lock
Gun mistaken for toy
Other

GLOSSARY

Asphyxiation: the condition of being deprived of oxygen and synonymous with suffocation.

Blunt instrument: a weapon that does not have a sharp or penetrating point, such as a club or a bat.

Brawl: three or more persons involved in a mutual, physical fight. The brawl may or may not escalate to involve weapons. This excludes one-sided physical fight (e.g., a group beats a single victim to death) or a fight between only two people.

Current depressed mood: identifies victims who were documented as having a current depressed mood by a family member or someone close to the victim. Family may frequently report that a victim "had been depressed lately" but the record does not supply information about whether the person was diagnosed with a depressive disorder. Rather than coding such a victim as suffering from depression (which may or may not be clinically true), this variable captures the available information more appropriately. The depressed mood may be part of a clinical depression or a short-term sadness. Depressed mood should not be inferred by the coder based on the circumstances; rather it must be noted in the record.

Current Mental Health Problem: identifies victims who were identified as having a mental health problem. Mental health problems include those disorders and syndromes listed in the DSM-IV (Diagnostic and Statistical Manual of Mental Disorders, Fourth Revision) with the exception of alcohol and other substance dependence (as these are captured in separate variables). Diagnoses are: Depression/dysthymia, Bipolar disorder, Schizophrenia, Anxiety disorder, Post-traumatic stress disorder, ADD or hyperactivity disorder, Eating disorder, Obsessive-compulsive disorder, Other (specify in diagnosis text), including mental retardation, autism, personality disorders, Alzheimer's, etc. "Yes" is indicated if it is mentioned in the OCME or police report that the victim was being treated for a mental health problem even if the nature of the problem is unclear (e.g., "was being treated for various psychiatric problems"). This variable would also be coded as "Yes" if the victim has a prescription for an antidepressant or other psychiatric medication.

Current Treatment for Mental Health Problem: identifies victims who were in current treatment for a mental health problem in the last two months. Treatment includes seeing a psychiatrist, psychologist, medical doctor, therapist, or other counselor for a mental health or substance abuse problem; receiving a prescription for an anti-depressant or other psychiatric medication; or residing in an inpatient or halfway house facility for mental health problems. Treatment also includes past treatment, unless noted that the problem has been resolved. Mental health problems include those disorders and syndromes listed in the DSM-IV (Diagnostic and Statistical Manual of Mental Disorders, Fourth Revision) with the exception of alcohol and other substance dependence (as these are captured in separate variables).

Drowning: weapon resulting from submersion in water or other liquid

Fall: weapon resulting from a fall, push, or jump from a high place

Homicide: death resulting from the intentional use of force or power, threatened or actual, against another person, group, or community

Incident: violent death incident can be made up of any of the following:

1. One isolated violent death
2. Two or more homicides, including legal interventions, when the deaths involve at least one person who is a suspect or victim in the first death and a suspect and victim in the second death and the fatal injuries are inflicted less than 24 hours apart
3. Two or more suicides or undetermined manner deaths, when: there is some evidence that the second or subsequent death was planned to coincide with and follow the preceding death and the fatal injuries are inflicted less than 24 hours apart
4. One or more homicides or unintentional firearm deaths combined with one or more suicides when: the suspect in the first death is the person who commits suicide, and the fatal injuries are inflicted less than 24 hours apart
5. Two or more unintentional firearm deaths when the same firearm inflicts two or more fatal injuries and the fatal injuries are inflicted by one shot or burst of shots

Legal Intervention Death: death when the decedent was killed by a police officer or other peace officer (persons with specified legal authority to use deadly force), including military police, acting in the line of duty

Personal weapons: includes the body, such as fists, feet, or hands used as a weapon

Poisoning: weapon including drugs (prescription, street, or alcohol), toxins, chemical substances, or gas (such as carbon monoxide)

Suffocation: condition of being deprived of oxygen and synonymous with asphyxiation

Sharp instrument: weapons that have a cutting edge or penetrating point, such as a knife, razor, chisel, or broken glass

Suicide: death resulting from the intentional use of force against oneself; a preponderance of evidence should indicate that the use of force was intentional

Terrorism-related death: homicides or suicides that result from events that are labeled by the Federal Bureau of Investigation (FBI) as acts of terrorism, which is a mechanism of death rather than a manner of death, where the manner of such death is either homicide or suicide. This designation can only be applied when federal authorities define the death as such.

Unintentional firearm death: deaths resulting from gunshot wounds inflicted by the victim or another person unintentionally

Undetermined manner of death: an event where available information is insufficient to enable a medical or legal authority to make a distinction between accident, self-harm, and assault (from the ICD-10 code definition).

Veteran Status: MAVDRS collected veteran status on victims only if they were a war veteran due to the wording of the death certificate used in Massachusetts. The victim was identified as a veteran if a war was specified under the section on the death certificate that says, "If US war veteran, specify war."

Violent Death: A death that results from the intentional use of physical force or power, threatened or actual, against oneself, another person, or a group or community. The person using the force or power need only have intended to use force or power; they need not have intended to produce the consequence that actually occurred. "Physical force" should be interpreted broadly to include the use of poisons or drugs. The word "power" includes acts of neglect or omission by one person who has control over another. In addition, MAVDRS captures unintentional firearm deaths.

WEAPONS

Weapons, as defined by NVDRS, differ slightly from the typical use of the term (firearm, knife, etc) and can include neglect or a means (drowning, fall) as well.

The following are the weapon choices for NVDRS:

Firearm
Non-powder gun
Sharp instrument
Blunt instrument
Poisoning
Hanging, strangulation, suffocation
Personal weapons
Fall
Explosive
Drowning
Fire or burns
Shaking, (e.g., shaken baby syndrome)
Motor Vehicle, including buses, motorcycles (not vehicular homicides- only when person is deliberately hit with a motor vehicle)
Other transport vehicle, (e.g., trains, planes, boats)
Intentional neglect, (e.g., starving a baby)
Biological weapons
Other
Unknown

Appendix B: Violent Death Age-adjusted Rates

Table 1. Violent Deaths by Intent and Demographics: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006[1]				
	N	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95% CI)**
Intent				
Suicide	455	61.6	7.1	6.8 (6.1-7.4)
Homicide	194	26.3	3.0	3.1 (2.6-3.5)
Undetermined	85	11.5	1.3	1.2 (1.0-1.5)
Unintentional firearm	1	0.1	--	--
Legal Intervention	4	0.5	--	--
Sex				
Male	532	72.0	17.1	16.5 (15.1-17.9)
Female	207	28.0	6.2	6.0 (5.2-6.8)
Race/Ethnicity				
White, non-Hispanic	554	75.0	10.7	10.1 (9.3-11.0)
Black, non-Hispanic	108	14.6	27.2	25.2 (20.3-30.0)
Asian, non-Hispanic	20	2.7	6.3	5.9 (3.2-8.6)
Hispanic	52	7.0	10.1	10.0 (7.0-13.0)
Other/mixed[2]	5	0.7	--	--
Age Group				
0-14	13	1.8	1.1	NA
15-24	125	16.9	13.9	NA
25-34	123	16.6	14.9	NA
35-44	155	21.0	15.6	NA
45-54	170	23.0	17.4	NA
55-64	89	12.0	12.6	NA
65-74	34	4.6	8.3	NA
75-84	21	2.8	6.8	NA
85+	9	1.2	6.6	NA
Total	**739**	**100.0**	**11.5**	**11.1 (10.3-11.9)**

[1] See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.

Table 2. Violent Deaths by Race/Ethnicity and Sex: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006[1]				
Female	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
White, non-Hispanic	173	83.6	6.4	6.1 (5.2-7.0)
Black, non-Hispanic	14	6.8	6.8	7.1 (3.3-10.8)
Asian, non-Hispanic	10	4.8	6.2	6.1 (2.1-10.1)
Hispanic	8	3.9	3.1	3.5 (0.9-6.2)
Other/mixed[2]	2	1.0	--	--
Total	**207**	**100.0**	**6.2**	**6.0 (5.2-6.8)**
Male	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95% CI)**
White, non-Hispanic	381	71.6	15.2	14.4 (13.0-15.9)
Black, non-Hispanic	94	17.7	48.8	44.0 (34.9-53.1)
Asian, non-Hispanic	10	1.9	6.4	5.6 (2.1-9.2)
Hispanic	44	8.3	17.2	16.7 (11.2-22.2)
Other/mixed[2]	3	0.6	--	--
Total	**532**	**100.0**	**17.1**	**16.5 (15.1-17.9)**

Table 3. Violent Deaths by County: Number, Percent, Crude Rate, Age-adjusted Rate, MA 2006				
County	**N**	**Percent[3]**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95% CI)**
Barnstable	34	4.9	15.2	15.1 (9.8-20.4)
Berkshire	18	2.6	13.8	13.0 (6.8-19.2)
Bristol	53	7.7	9.8	9.7 (7.1-12.3)
Dukes	3	0.4	---	---
Essex	67	9.7	9.2	8.8 (6.7-11.0)
Franklin	7	1.0	9.8	7.4 (1.8-13.0)
Hampden	65	9.4	14.2	13.8 (10.4-17.2)
Hampshire	9	1.3	5.9	6.1 (2.1-10.1)
Middlesex	120	17.4	8.2	7.9 (6.5-9.3)
Nantucket	1	0.1	---	---
Norfolk	59	8.6	9.0	9.0 (6.7-11.4)
Plymouth	48	7.0	9.8	9.9 (7.1-12.7)
Suffolk	132	19.1	18.6	16.9 (14.0-19.8)
Worcester	74	10.7	9.5	9.3 (7.1-11.4)
Unknown/Outside MA[4]	49	--	--	--
Total known MA county	**690**	**100.0**	**--**	**--**
Total	**739**	**--**	**11.5**	**11.1 (10.3-11.9)**

[1] See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.
[3] Percent is based on known Massachusetts county of violent death (N=690).
[4] Percent, crude rate, and age-adjusted rate were not calculated on unknown county nor injuries from outside Massachusetts.

Table 4. Suicides by Demographics: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006[1]				
	N	Percent	Crude Rate per 100,000	Age-adjusted Rate per 100,000 (95%CI)
Sex				
Male	322	70.8	10.3	10.0 (8.9-11.0)
Female	133	29.2	4.0	3.8 (3.1-4.4)
Race/Ethnicity				
White, non-Hispanic	410	90.1	7.9	7.4 (6.7-8.1)
Black, non-Hispanic	15	3.3	3.8	4.0 (1.9-6.0)
Asian, non-Hispanic	15	3.3	4.7	4.5 (2.1-7.0)
Hispanic	14	3.1	2.7	2.8 (1.3-4.4)
Other/mixed[2]	1	0.2	--	--
Age Group				
0-14	3	0.7	--	NA
15-24	45	9.9	5.0	NA
25-34	67	14.7	8.1	NA
35-44	102	22.4	10.3	NA
45-54	122	26.8	12.5	NA
55-64	69	15.2	9.8	NA
65-74	23	5.1	5.6	NA
75-84	16	3.5	5.2	NA
85+	8	1.8	5.9	NA
Total	**455**	**100.0**	**7.1**	**6.8 (6.1-7.4)**

[1] See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.

Table 5. Suicides by Race/Ethnicity and Sex: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006[1]				
Female	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
White, non-Hispanic	117	88.0	4.4	4.0 (3.3-4.8)
Black, non-Hispanic	3	2.3	--	--
Asian, non-Hispanic	8	6.0	5.0	5.2 (1.4-8.9)
Hispanic	4	3.0	--	--
Other/mixed[2]	1	0.8	--	--
Total	**133**	**100.0**	**4.0**	**3.8 (3.1-4.4)**
Male	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
White, non-Hispanic	293	91.0	11.7	11.0 (9.8-12.3)
Black, non-Hispanic	12	3.7	6.2	6.8 (2.9-10.8)
Asian, non-Hispanic	7	2.2	4.5	3.8 (0.9-6.8)
Hispanic	10	3.1	3.9	4.2 (1.4-7.0)
Other/mixed[2]	0	0.0	--	--
Total	**322**	**100.0**	**10.3**	**10.0 (8.9-11.0)**

Table 6. Suicides by County: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006[1]				
County	**N**	**Percent[3]**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95% CI)**
Barnstable	26	6.0	11.6	11.3 (6.8-15.8)
Berkshire	16	3.7	12.2	11.1 (5.5-16.6)
Bristol	30	6.9	5.5	5.4 (3.5-7.4)
Dukes	3	0.7	--	--
Essex	46	10.6	6.3	5.9 (4.2-7.7)
Franklin	7	1.6	9.7	7.4 (1.8-13.0)
Hampden	35	8.0	7.6	7.3 (4.8-9.7)
Hampshire	8	1.8	5.2	5.5 (1.6-9.4)
Middlesex	89	20.5	6.1	5.8 (4.6-7.0)
Nantucket	1	0.2	--	--
Norfolk	50	11.5	7.6	7.7 (5.5-9.8)
Plymouth	26	6.0	5.3	5.2 (3.2-7.2)
Suffolk	43	9.9	6.3	5.9 (4.1-7.7)
Worcester	55	12.6	7.0	6.8 (5.0-8.7)
Unknown/Outside MA[4]	20	--	--	--
Total known MA county	**435**	**100.0**	**--**	**--**
Total	**455**	**--**	**7.1**	**6.8 (6.1-7.4)**

[1] See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.
[3] Percent is based on known Massachusetts county of suicide (N=435).
[4] Percent, crude rate, and age-adjusted rate were not calculated on unknown county nor injuries from outside Massachusetts.

Table 7. Homicides by Demographics: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006[1]				
	N	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
Sex				
Male	155	79.9	5.0	4.9 (4.1-5.7)
Female	39	20.1	1.2	1.2 (0.8-1.6)
Race/Ethnicity				
White, non-Hispanic	71	36.6	1.4	1.4 (1.1-1.8)
Black, non-Hispanic	82	42.3	20.6	18.3 (14.3-22.3)
Asian, non-Hispanic	4	2.1	--	--
Hispanic	34	17.5	6.6	6.2 (3.9-8.5)
Other/mixed[2]	3	1.5	--	--
Age Group				
0-14	9	4.6	0.8	NA
15-24	73	37.6	8.1	NA
25-34	49	25.3	6.0	NA
35-44	31	16.0	3.1	NA
45-54	19	9.8	1.9	NA
55-64	5	2.6	0.7	NA
65-74	7	3.6	1.7	NA
75-84	0	0.0	0.0	NA
85+	1	0.5	--	NA
Total	**194**	**100.0**	**3.0**	**3.1 (2.6-3.5)**

[1] See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.

Table 8. Homicides by Race/Ethnicity and Sex: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006[1]				
Female	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
White, non-Hispanic	26	66.7	1.0	1.1 (0.7-1.5)
Black, non-Hispanic	8	20.5	3.9	3.9 (1.2-6.6)
Asian, non-Hispanic	1	2.6	--	--
Hispanic	3	7.7	--	--
Other/mixed[2]	1	2.6	--	--
Total	**39**	**100.0**	**1.2**	**1.2 (0.8-1.6)**
Male	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
White, non-Hispanic	45	29.0	1.8	1.8 (1.3-2.3)
Black, non-Hispanic	74	47.7	38.4	33.1 (25.4-40.8)
Asian, non-Hispanic	3	1.9	--	--
Hispanic	31	20.0	12.1	10.9 (6.6-15.3)
Other/mixed[2]	2	1.3	--	--
Total	**155**	**100.0**	**5.0**	**4.9 (4.1-5.7)**

Table 9. Homicides by County: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006[1]				
County	**N**	**Percent[3]**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95% CI)**
Barnstable	4	2.1	--	--
Berkshire	2	1.0	--	--
Bristol	15	7.8	2.8	2.8 (1.4-4.2)
Dukes	0	0.0	0.0	--
Essex	15	7.8	2.0	2.1 (1.0-3.1)
Franklin	0	0.0	0.0	--
Hampden	23	12.0	5.0	5.1 (3.0-7.2)
Hampshire	0	0.0	0.0	--
Middlesex	26	13.5	1.8	1.8 (1.1-2.5)
Nantucket	0	0.0	--	--
Norfolk	5	2.6	0.8	0.8 (0.1-1.5)
Plymouth	15	7.8	3.0	3.3 (1.6-5.0)
Suffolk	77	40.1	11.2	9.4 (7.2-11.5)
Worcester	10	5.2	1.3	1.3 (0.5-2.1)
Unknown/Outside MA[4]	2	--	--	--
Total known MA county	**192**	**100.0**	**--**	**--**
Total	**194**	**--**	**3.0**	**3.1 (2.6-3.5)**

[1] See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.
[3] Percent is based on known Massachusetts county of homicide (N=192).
[4] Percent, crude rate, and age-adjusted rate were not calculated on unknown county nor injuries from outside Massachusetts.

Table 10. Deaths of Undetermined Intent by Demographics: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006[1]				
	N	Percent	Crude Rate per 100,000	Age-adjusted Rate per 100,000 (95%CI)
Sex				
Male	50	58.8	1.6	1.5 (1.1-1.9)
Female	35	41.2	1.1	1.0 (0.7-1.3)
Race/Ethnicity				
White, non-Hispanic	70	82.4	1.3	1.2 (0.9-1.5)
Black, non-Hispanic	11	12.9	2.8	2.9 (1.1-4.6)
Asian, non-Hispanic	1	1.2	--	--
Hispanic	3	3.5	--	--
Other/mixed[2]	0	0.0	--	--
Age Group				
0-14	1	1.2	--	NA
15-24	4	4.7	--	NA
25-34	7	8.2	0.9	NA
35-44	20	23.5	2.0	NA
45-54	29	34.1	3.0	NA
55-64	15	17.6	2.1	NA
65-74	4	4.7	--	NA
75-84	5	5.9	1.6	NA
85+	0	0.0	0.0	NA
Total	**85**	**100.0**	**1.3**	**1.2 (1.0-1.5)**

[1] See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.

Table 11. Deaths of Undetermined Intent by Race/Ethnicity and Sex: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006[1]				
Female	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
White, non-Hispanic	30	85.7	1.2	1.0 (0.6-1.4)
Black, non-Hispanic	3	8.6	--	--
Asian, non-Hispanic	1	2.9	--	--
Hispanic	1	2.9	--	--
Other/mixed[2]	0	0.0	--	--
Total	**35**	**100.0**	**1.1**	**1.0 (0.7-1.3)**
Male	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
White, non-Hispanic	40	80.0	1.6	1.4 (1.0-1.9)
Black, non-Hispanic	8	16.0	4.2	4.0 (1.2-6.9)
Asian, non-Hispanic	0	0.0	--	--
Hispanic	2	4.0	--	--
Other/mixed[2]	0	0.0	--	--
Total	**50**	**100.0**	**1.6**	**1.5 (1.1-1.9)**

Table 12. Deaths of Undetermined Intent by County: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006[1]				
County	**N**	**Percent[3]**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95% CI)**
Barnstable	3	5.2	--	--
Berkshire	0	0.0	--	--
Bristol	7	12.1	1.3	1.3 (0.3-2.2)
Dukes	0	0.0	--	--
Essex	6	10.3	0.8	0.8 (0.2-1.4)
Franklin	0	0.0	--	--
Hampden	6	10.3	1.3	1.2 (0.2-2.1)
Hampshire	1	1.7	--	--
Middlesex	5	8.6	0.3	0.3 (0.0-0.6)
Nantucket	0	0.0	--	--
Norfolk	3	5.2	--	--
Plymouth	6	10.3	1.2	1.2 (0.2-2.2)
Suffolk	12	20.7	1.7	1.6 (0.7-2.5)
Worcester	9	15.5	1.2	1.1 (0.4-1.8)
Unknown/Outside MA[4]	27	--	--	--
Total known MA county	**58**	**100.0**	**--**	**--**
Total	**85**	**--**	**1.3**	**1.2 (1.0-1.5)**

[1] See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.
[2] Rates for other/mixed race were not calculated due to lack of denominator information.
[3] Percent is based on known Massachusetts county of undetermined intent death (N= 58).
[4] Percent, crude rate, and age-adjusted rate were not calculated on unknown county nor injuries from outside Massachusetts.

Violent Deaths in Massachusetts: Surveillance Update, 2006
Massachusetts Department of Public Health